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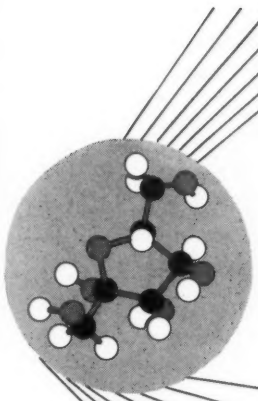

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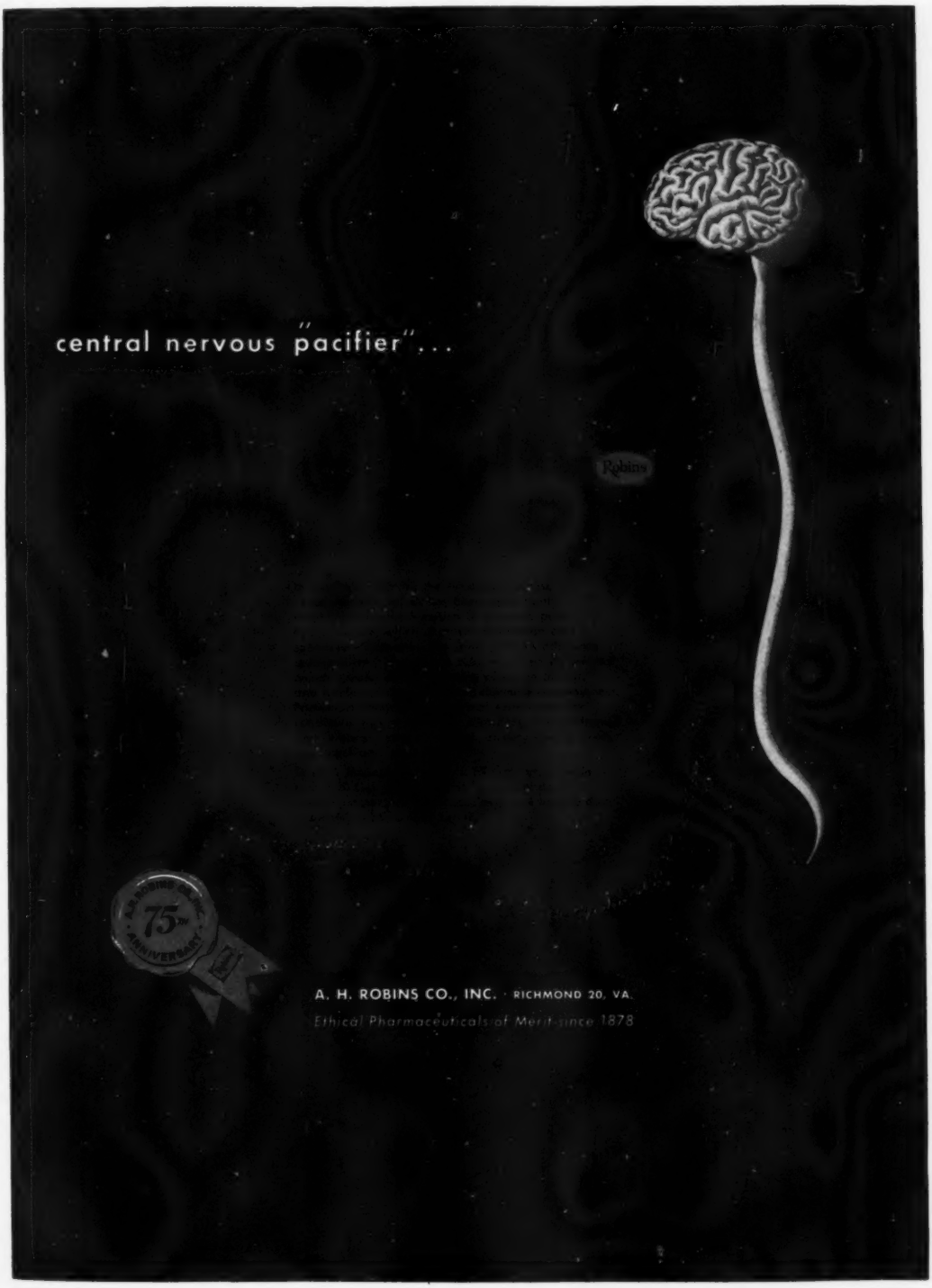
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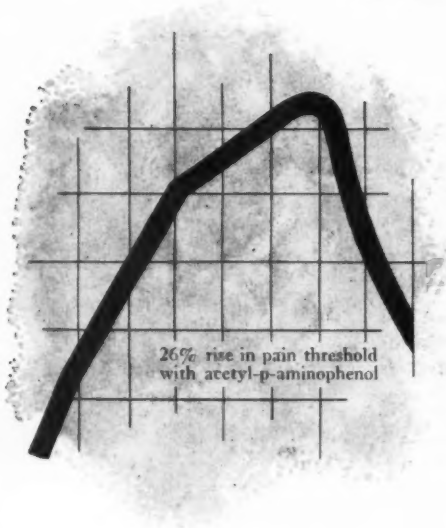

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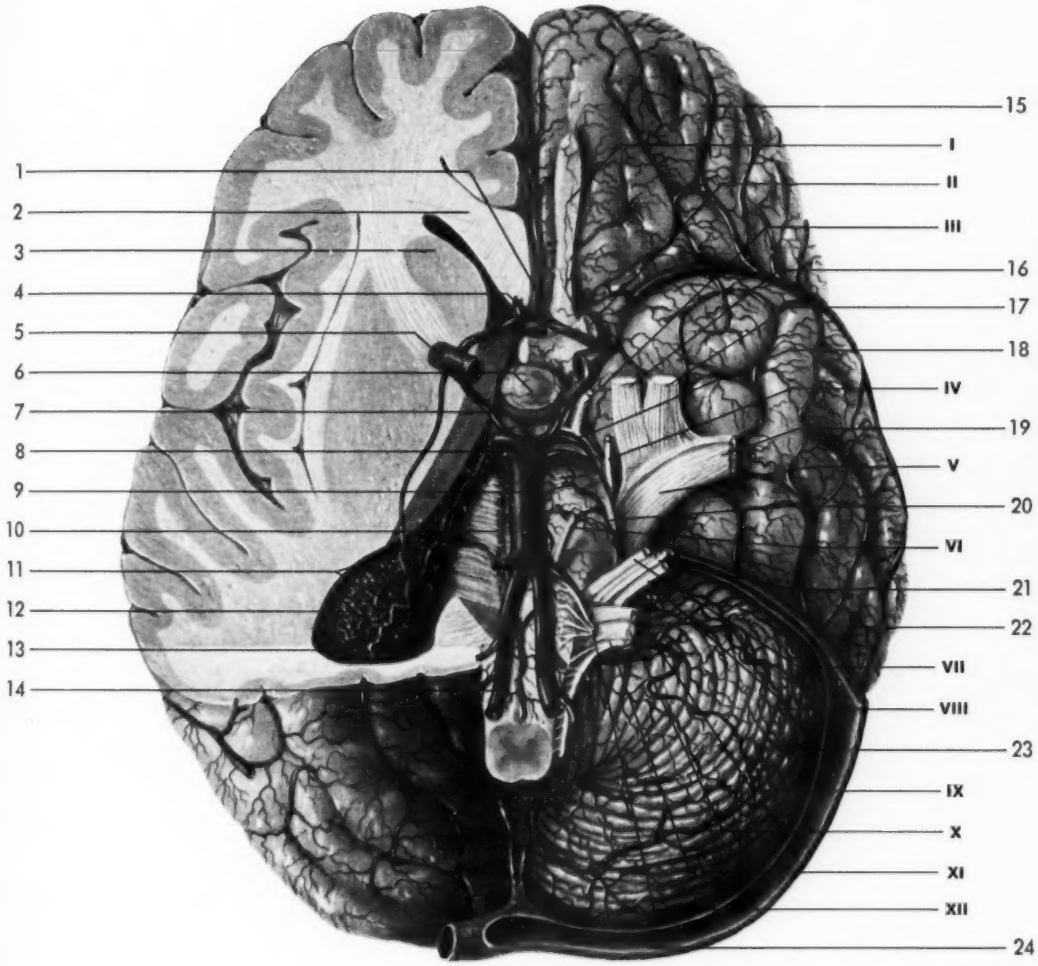

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3. Head of caudate nucleus
4. Anterior communicating artery
5. Middle cerebral artery
6. Hypophysis
7. Posterior communicating artery
8. Superior cerebellar artery
9. Basilar artery
10. Internal cerebral vein
11. Choroid artery and vein
12. Choroid plexus of lateral ventricle
13. Inferior cornu of lateral ventricle
14. Vertebral artery
15. Frontal lobe
16. Ophthalmic nerve
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19. Mandibular nerve
20. Pons
21. Intermediate nerve
22. Temporal lobe
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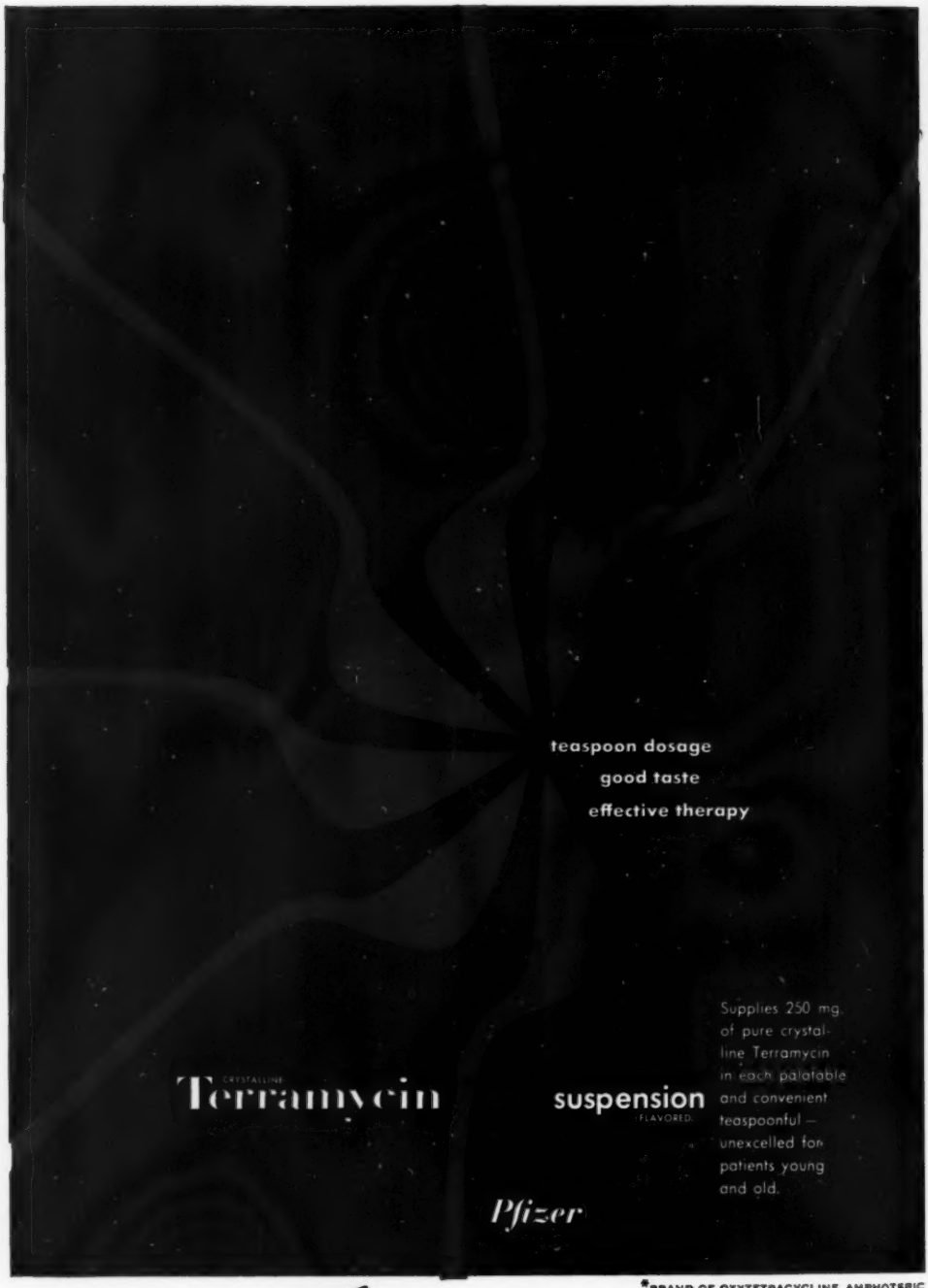

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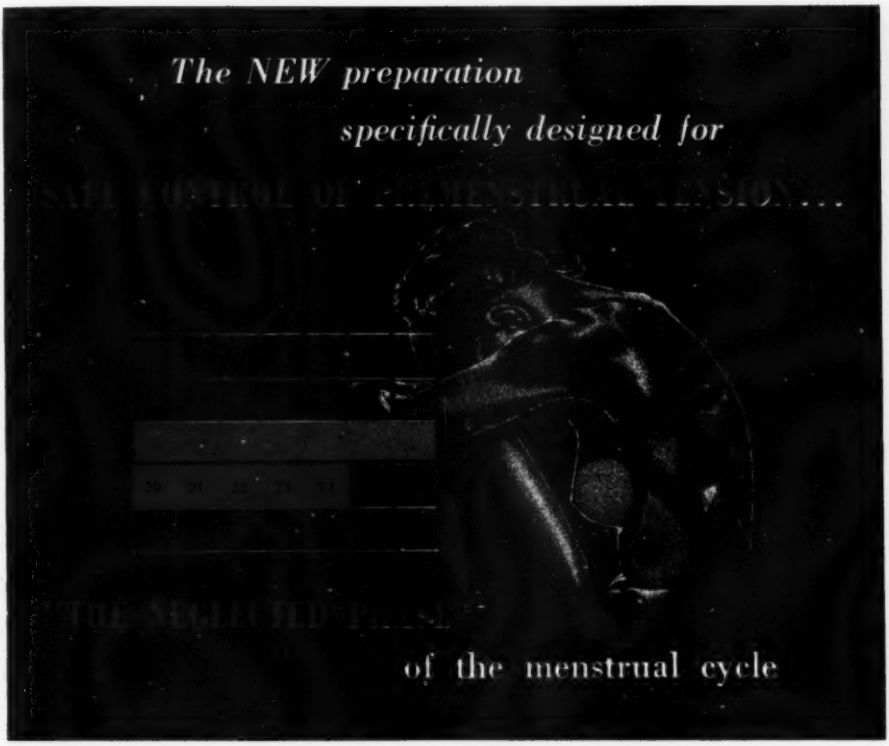

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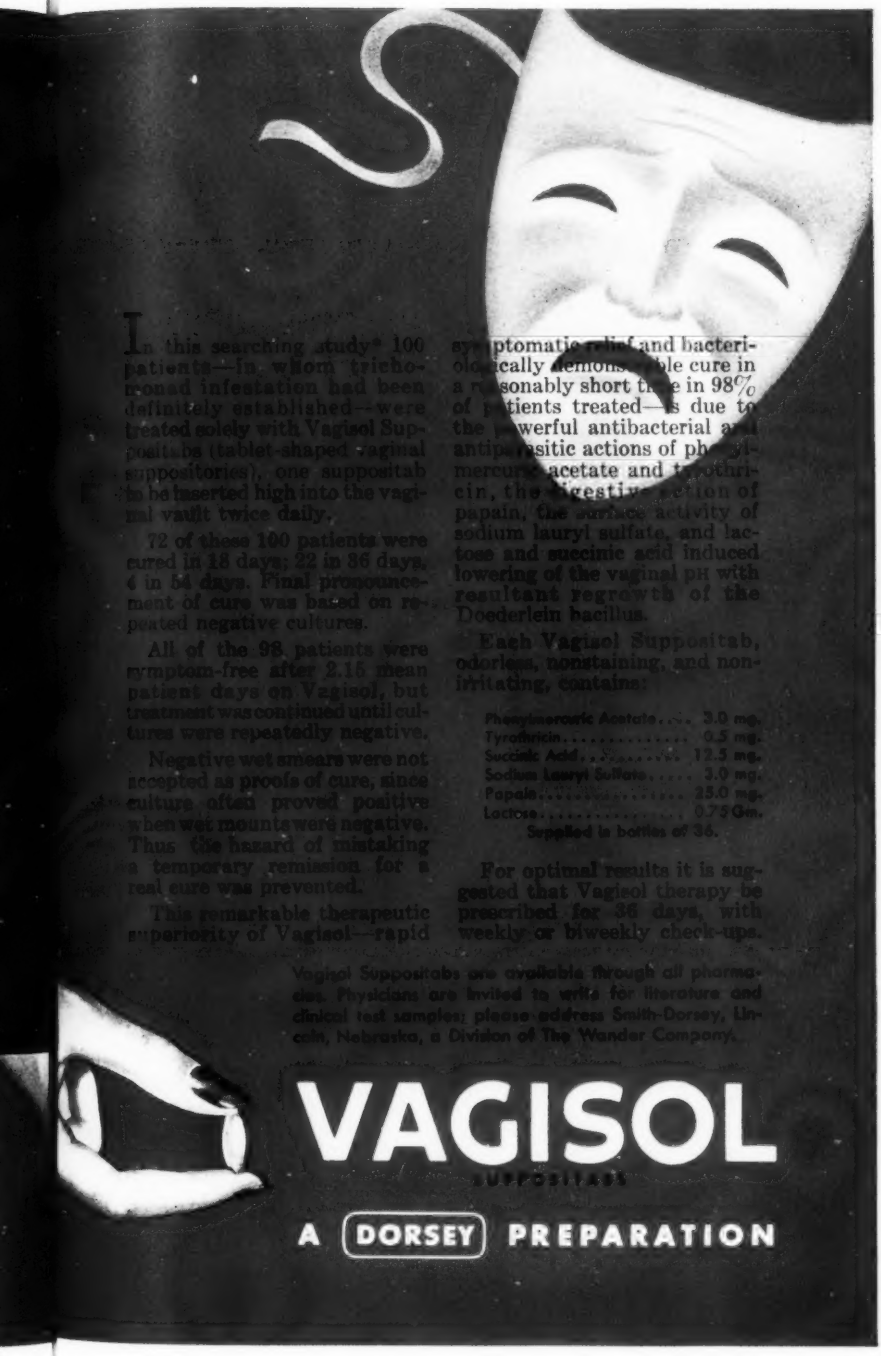
* Shaw, H. N.; Henriksen, E.; Kessel, J. F., and Thompson, C. F.: Clinical and Laboratory Evaluation of "Vagisol" in the Treatment of Trichomonas Vaginalis Vaginitis, Western J. of Surg., Obst. & Gynec. 60:11 (Nov.) 1952.


In this searching study* 100 patients—in whom trichomonad infestation had been definitely established—were treated solely with Vagisol Suppositabs (tablet-shaped vaginal suppositories), one suppositab to be inserted high into the vaginal vault twice daily.
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Tyrothricin..... 0.5 mg.
Succinic Acid..... 12.5 mg.
Sodium Lauryl Sulfate..... 3.0 mg.
Papain..... 25.0 mg.
Lactose..... 0.75 Gm.
Supplied in bottles of 36.
For optimal results it is suggested that Vagisol therapy be prescribed for 36 days, with weekly or biweekly check-ups.
Vagisol Suppositabs are available through all pharmacies. Physicians are invited to write for literature and clinical test samples; please address Smith-Dorsey, Lincoln, Nebraska, a Division of The Wander Company.
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A DORSEY PREPARATION

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*Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, The Macmillan Company, 1941, p. 460.

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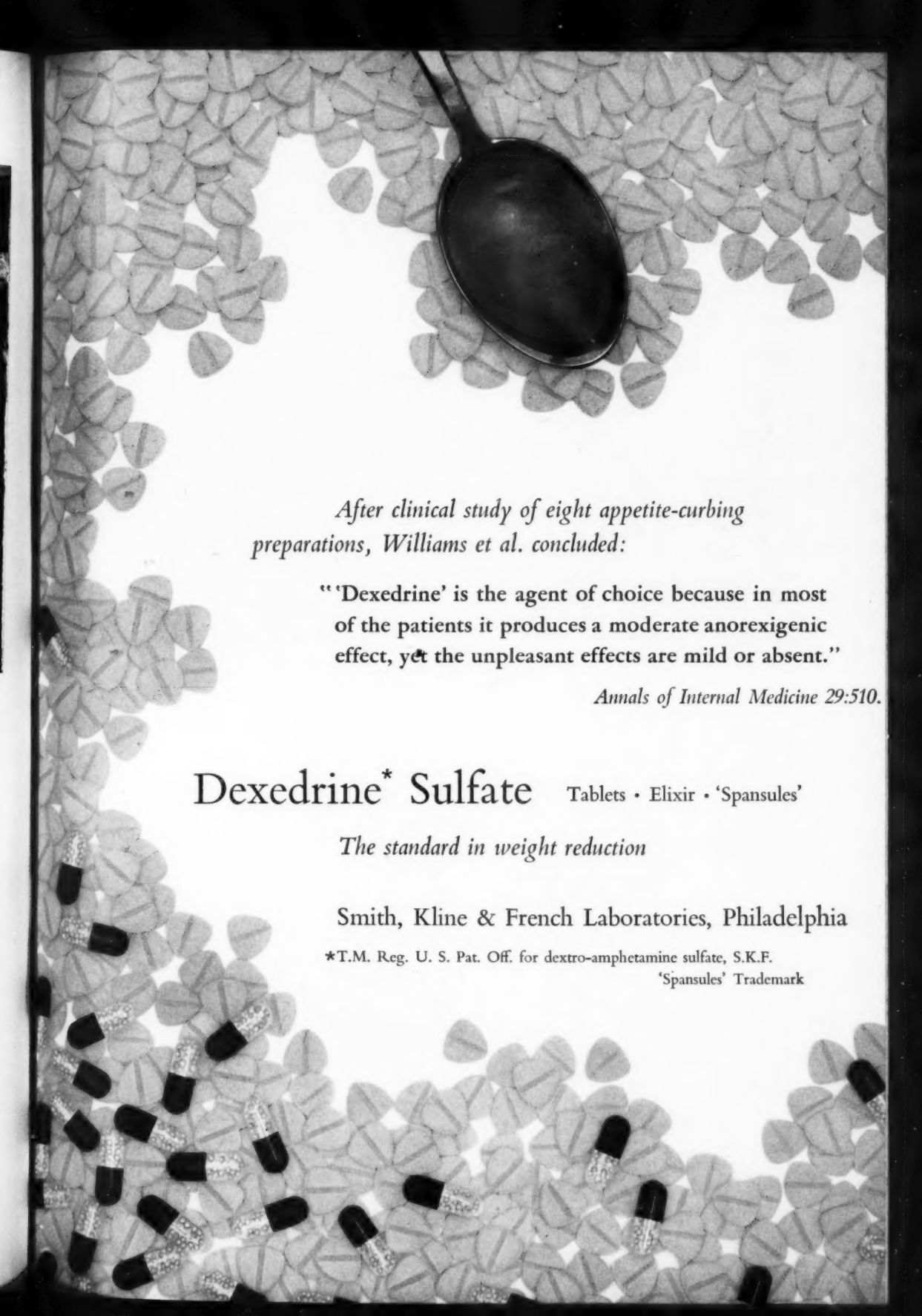

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Annals of Internal Medicine 29:510.

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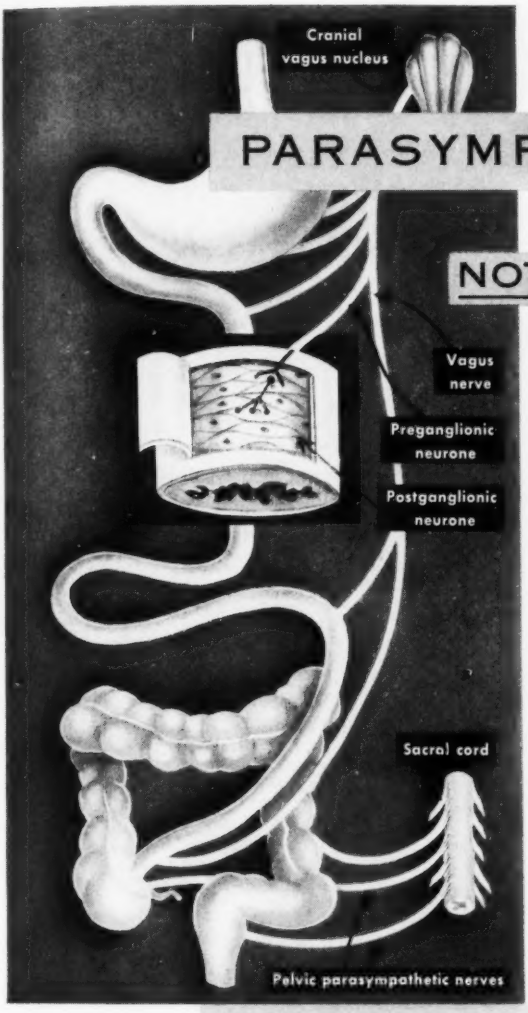

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PARASYMPATHOLYTIC . . .

NOT *parasympathomimetic*

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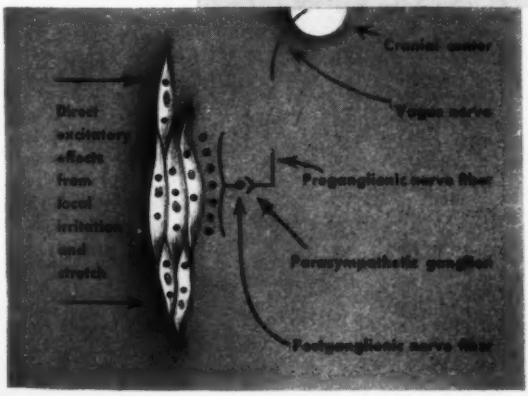

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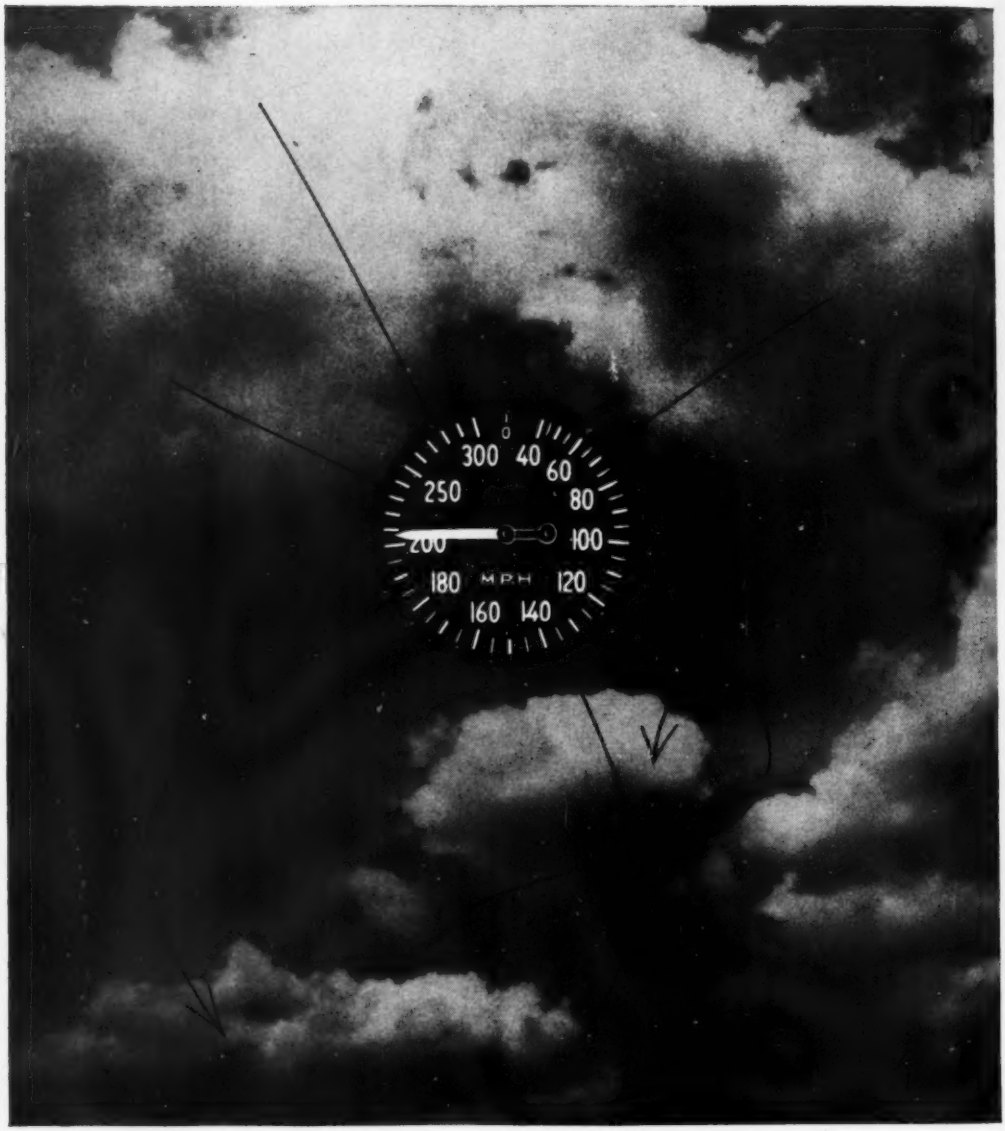

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With a gentle sedation that depresses the vomiting reflex and relieves the patient's nervousness.

CONTROLS EXCESS PARASYMPATHETIC STIMULI

Which give rise to salivation, gastric hypersecretion and, in turn, vomiting.

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Provides the vitamins of the B complex which tend to reduce the incidence of nausea and vomiting.

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Minimizes the nauseous reaction to various foods by decreasing the sensitivity of the mucosal lining of the stomach.

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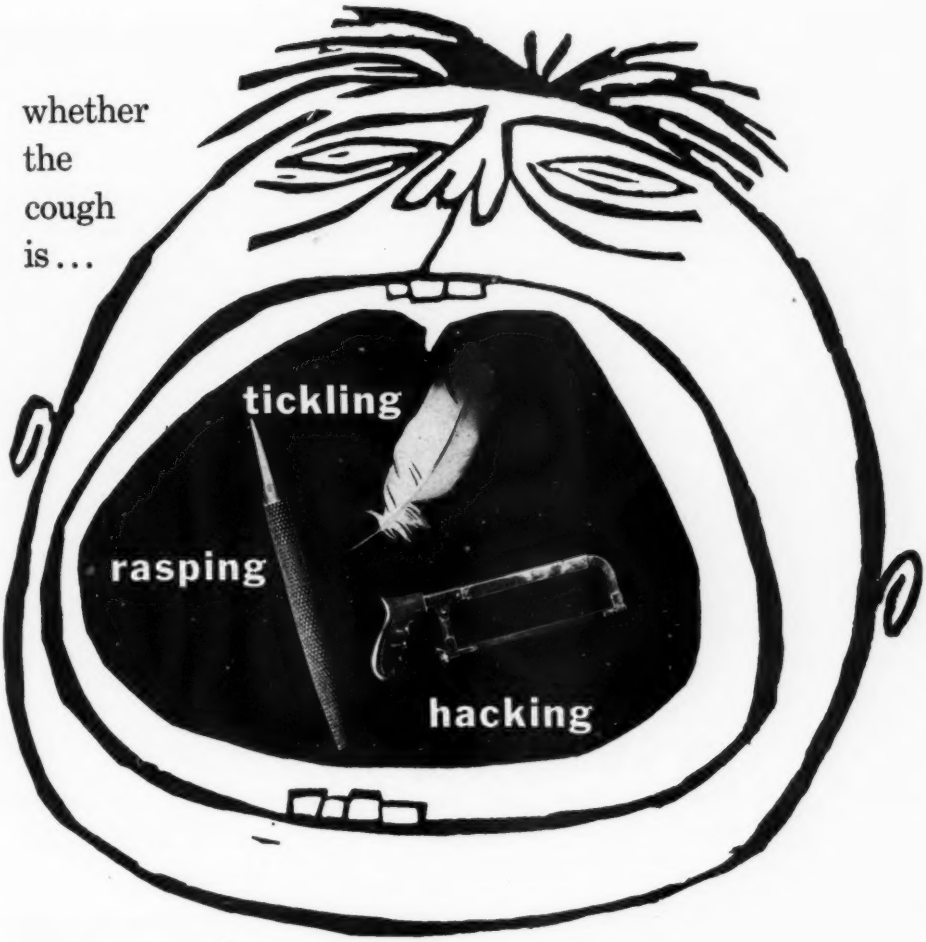

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1. Heimark, J.J. and Parsons, R.L.: Minnesota Med., *33*:1102, 1950.
2. J.A.M.A., Queries and Minor Notes, *135*:810, 1947.
3. Carroll, G. and Zingale, F.G.: Southern Med. J., *31*:233 1938.

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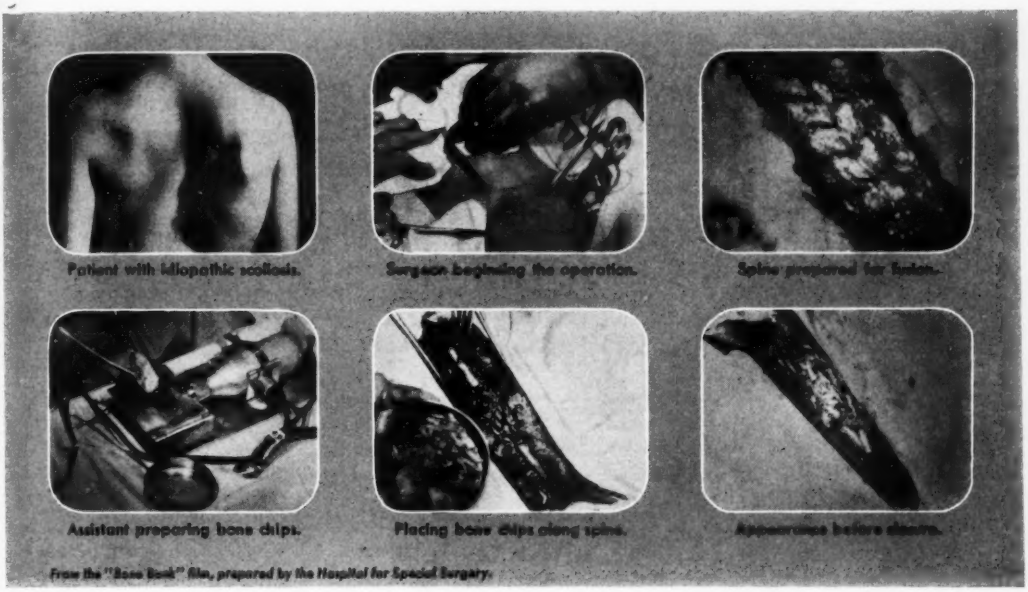
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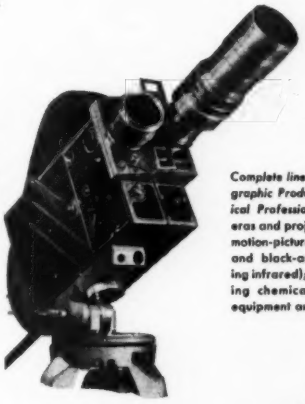

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SOUTHERN MEDICAL JOURNAL

JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

PUBLISHED MONTHLY BY THE SOUTHERN MEDICAL ASSOCIATION AT BIRMINGHAM, ALA.

Volume 46 FEBRUARY 1953 Number 2

THE SOUTHERN MEDICAL ASSOCIATION, ITS PAST AND ITS FUTURE*

By R. J. WILKINSON, M.D.
Huntington, West Virginia

To be elevated to the presidency of one of the largest medical associations in the United States is a distinct honor, an honor that can come only to a few, and for this manifestation of your confidence I am humbly grateful. This honor carries with it a responsibility, and I believe you rightfully should expect me to further the cause of the Southern Medical Association by leading its crusade for better medicine for all the people, and to continue the fight to safeguard our sacred liberties from the sinister inroads of creeping socialism.

When we turn back the pages of medicine and note the wonderful accomplishments during the past fifty years, we are profoundly impressed by the glorious rôle of the Southern physician and the great contribution the Southern Medical Association has made in advancing the cause of better health in our Southland. In reviewing the history of this organization we bow our heads in admiration for great leaders, men like Savage, Crawford, Martin, Crook, Cowan, Dowling, and many, many others, who with an unselfish devotion to a great cause and with a sense of duty to the public of the South organized the Association.

Later, it was through his great leadership and unselfish devotion to the cause of better medicine that Dr. Seale Harris assumed the position of secretary-treasurer and editor of the JOURNAL without salary. During his tenure of twelve years the Southern Medical Association was placed upon a sound basis, and it was upon his recommendation at the 1912 meeting that the organization was expanded to include all of the Southern states, and Mr. C. P. Loranz was chosen as business manager.

No doubt you all are familiar with the fine work Mr. Loranz has done for the Southern Medical Association, and we should be forever grateful to him for his untiring efforts. He came to us at the time the Association was expanding, and by reason of his dynamic force and the fact that he was a full time official much has been accomplished. Dr. Harris relinquished his duties in 1921, and Mr. Loranz became secretary-manager, and Dr. M. Y. Dabney was made editor of the JOURNAL. Here I should also like to pay a glowing tribute to Dr. Dabney and his talented wife, the assistant editor, for their splendid work in giving us a journal that has been instrumental in disseminating medical knowledge of the highest type, a journal that we are proud to call our own.

During these early years of the organization we were concerned only with the problems of scientific medicine; consequently our founding fathers provided that our activities as a medical society should be confined to scientific problems, being content to leave other matters vital to our welfare to state societies and the American Medical Association. No doubt, many of you can recall that during these early years of our Association the doctor was a dominant figure in his community. He was highly respected in every walk of society and was a leader in civic and political affairs. In other words, he stood for honesty and decency in government and insisted that men of ability should administer this public trust. He was not beset as we are today by all kinds of "isms" that are upsetting our economy, because he was not afraid to stand up and be counted on all civic and political matters that vitally affected his freedom.

But notwithstanding all the good and fine things of the past, time marches on, and inevitably conditions change. We are continu-

*President's Address, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

ally in a process of evolution and our lives are being altered by changing social and economic conditions. Therefore, we must be alert and prepared to meet every challenge in a realistic way. We must anticipate these changes and offer a progressive program to meet them instead of assuming a defensive attitude. In years gone by the doctor, perhaps of all people, exercised the greatest influence in molding community thinking; but due to the highly technical trend in medicine during the past few decades, a trend that has staggered the imagination of man in its wonderful accomplishments in prolonging life, we have grown cold to this responsibility and have been satisfied to leave matters of this kind to the ward politician with the disastrous results that must be familiar to all. In this connection, I acknowledge with shame the fact that approximately but fifty per cent of our doctors are registered, and that only about half of this number exercise their franchise, the greatest heritage ever bestowed upon man.

The time has arrived when we must join with good citizens and physicians and throw off the shackles of personal greed and selfishness. We must rededicate ourselves to the cause of honest, and decent government in all of its subdivisions if we would be true to the great heritage passed to us by our forefathers, and be effective in meeting the problems of today. Emerson aptly summed up the whole question many years ago by saying:

"Of what avail the plow or sail
Or life itself if freedom fail."

The responsibility of the individual doctor and that of the Southern Medical Association are parallel except that a great medical organization can exercise a tremendous influence upon the thinking of a large number of individuals both within and without the profession. Therefore, my remarks henceforth will be directed to the responsibility of the Southern Medical Association, with suggestions as to how to meet these problems.

Let it be understood that our Association is not identified with any other medical organization, and whatever action is taken should in no way conflict with state medical societies or with the American Medical Association. With our potential power we can rather be of tremendous help to these organizations, especially in educating the physician as to his responsibility. However, it should be recognized that we represent the South, and since there are many problems especially affecting our area, these regional problems should be met by us. But if we are to be strong and effective in this challenging work, we must dispel the belief held by many that a dynasty exists creating a centralized control which places the affairs of this great organization in the hands of a few. I say to you in all frankness, that this fact is disturbing a definite segment of our membership; so much so, that changes designed to broaden our plan of operation, a plan whereby more of the members can feel that they have a voice in the Southern Medical Association, should be adopted.

We must become interested in all branches of education, especially medicine, dentistry, pharmacy and nursing. But remember, education in all of its ramifications is distinctly a problem of local and state government and must be free of Federal aid and its consequent interference, because obviously this will lead only to complete bureaucratic Federal domination. Therefore, it would seem feasible, and I am so advising our Council, to participate by naming representatives to the Southern Board for Regional Education that is now being directed by Dr. Ivey of Atlanta. Through this splendid organization we may be able to integrate certain phases of our education program, whereby one school can be dominant in pharmacy, another in dentistry, others solely in medicine, and so on.

No doubt many of the small medical schools could and should be merged with large schools in urban areas where clinical facilities are adequate, because with today's insurance program many persons are protected and do not desire to be used for clinical teaching purposes. This is creating a problem for our medical teachers.

The medical profession has been most careless and negligent in meeting its responsibility to the medical school, and it is largely through this lack of interest that we find the schools, especially in the South, facing financial difficulty. The time has arrived when medical education should again be directed by our profession, and this is especially true in the South because of the many problems involved, problems which cannot be adequately directed by the American Medical

Association, because this organization is national in scope and obviously cannot make rules affecting specific areas. The responsibility of medical education belongs to the states and it is our duty to help educate the public to meet this need.

In West Virginia we recently enacted legislation creating a four-year school of medicine, dentistry, and nursing at our University. This was financed by a levy of one cent on each soft drink, and, notwithstanding the great fight by certain interests to defeat this bill, we collected three and one-half million dollars the first year. It has been alleged that this tax is discriminatory, but with a similar tax placed upon candy, chewing gum, and so on, this objection would be eliminated and the combined tax, which is only a luxury tax after all, would provide funds for medical education without Federal subsidy. The schools, especially in the South, which are not heavily endowed, must adopt some such plan of taxation to meet this problem.

The shortage of general practitioners in our Southland is indeed a real problem and a threat to our medical profession. Due to the specialization program that has been adopted by most teaching institutions, practically every student who graduates immediately becomes a potential specialist, and usually this means surgery in some one of its many subdivisions.

To curtail the tremendous strides that are being made by various medical cults, it would seem reasonable and desirable, first, to graduate more medical students each year, and then to require two years of general practice before they are permitted to train for a specialty. This would assure doctors for needed areas, curtail the inroads being made by the would-be healers, and would be helpful in stabilizing or perhaps reducing the cost of medical care. Furthermore, it would give young doctors an opportunity to familiarize themselves with some of the business fundamentals that are essential for success, and I am sure you will agree that these two years of experience will better fit the individual doctor to be a specialist, for after all he must first be a doctor if he is to succeed as a specialist.

A plan of this kind seems desirable, especially if we can establish reasonably equipped medical centers at strategic places so these young men can practice good medicine. These centers that are supervised by medical schools seem to offer the highest type of service, provided they can be controlled by the local medical profession. In this connection, also, it might be of interest to speculate upon how many of these boys will be satisfied with their location and elect to remain in general practice. But to accomplish this, we must give credit for these two years of general practice by reducing the years required for those who wish to specialize.

The physician-hospital relationship is a problem indeed and requires a great deal of study and education if the doctor is to be protected by reason of the hospitals entering the field of the practice of medicine. All too often in the past the physician owner has been the greatest offender, but today we see violation of statutes that exist in most states being ignored by most hospitals. As I have repeatedly pointed out, this can and will ultimately lead to a complete hospital domination of the physician. And in this connection, I remind you of the sinister inroads that are being made by the veterans' hospital program. More and more hospitals are being erected each year at a staggering cost to the taxpayer, notwithstanding the tragic and glaring fact that many of them are only partly filled, and then only by veterans who are not rightfully entitled to this service. It is reported that approximately ninety per cent of those treated have non-service connected disabilities, and many of these probably do not need hospitalization. A careful study might reveal the startling fact that many of those who are admitted are encouraged to be dishonest by falsifying their application in claiming pauperism. But this seems to be all right, since no one apparently is denied admission regardless of his financial status.

What can all this mean? Evidently it confirms rumors that the administration contemplates including both veteran and family in this program, and you will agree that this will be medicine that is Government controlled.

For the disabled veteran with service connected disability nothing should be spared to assure him the finest type of medical and

nursing care, but to accomplish this I am sure a more adequate service can be offered those boys in private institutions at a tremendous saving in tax money.

In this connection, it might be of interest to quote from remarks of Dr. Evarts A. Graham, Chairman of the Board of Regents of the American College of Surgeons, which appeared in the July issue of *Annals of Surgery*. In discussing the present day problems incident to operating hospitals and medical schools, particularly the difficulty in obtaining nurses and non-professional help, he says:

"A more serious threat, however, as I see it, is the rapidly expanding program of the veterans' hospitals. This threat is of two kinds. For one thing, they can pay larger salaries and thus draw away from the teaching hospitals nurses and much of the non-professional help. This is not bad at present, but what will be the status of affairs when the 17 million living veterans persuade Congress, as they probably will, to have the government give free hospital care in the veterans' hospitals to all members of their families? Multiply 17 by, say 4, an average family, and you will have 68 million people geting free service if they want it. But this is not all. If we have universal training, with each young man and perhaps each young woman also, acquiring thereby the status of a veteran, it is apparent to anybody that most of the population of the country will have free hospital service paid for by the government and probably in the veterans' hospitals unless something is done to stop it. This will be truly government medicine, whether it is called socialism or not."

I am shocked and amazed at the hands off attitude of organized medicine, and this of course means the American Medical Association, because this problem affects every hospital and obviously affects the cost of medical care. A vacillating policy will lead only to defeat, because the American Legion and other veterans' organizations have enthusiastically endorsed the Veterans' Administration hospital policies. In other words it will be regimentation under an assumed name. In this connection, it would seem timely that some one should acquaint these patriotic organizations with the real facts regarding the Veterans' Administration hospital program and its ultimate effect upon our whole economic structure.

The veterans' hospitals that are close to medical schools certainly offer a mutual advantage, so why not designate these for the service connected disabled veteran, since only about ten per cent of those hospitalized come under this category? These patients would be available for teaching purposes and at the same time would be assured of a very high type of professional care. The remaining hospitals, and those under construction, should be given to the states, counties, or cities, provided they are operated for the care of the sick, be they mental, tuberculous, or public general hospitals. A plan of this kind would largely solve the hospital bed shortage that exists in practically every state in the union, and would eliminate the Hill-Burton fund that is now being administered by Federal and state agencies which are often politically controlled.

Quoting from a recent bulletin issued by the Washington office of the American Medical Association:

"A panel group of the President's Commission on Health Needs of the Nation suggests that Federal hospitals be turned over to communities 'for nominal fees' with the Federal Government paying the costs of hospitalizing its cases. Such a procedure, the panel stated, would eliminate competition between Federal and local hospitals for scarce medical personnel; would make medical care equally available to all *Federal* beneficiaries and would eliminate the problem of administering a large and bulky service. The Commission has taken no action.

"The proposal was opposed by Vice Admiral Joel T. Boone, Chief Medical Director of Veterans' Administration. He said it would result in a supercolossal hospital operation and spotty treatment for veterans."

Do you agree with this statement?

But in this connection we must reckon with the political law makers who seem to be more interested in wasting tax money than in providing for the veterans on a sane and sensible basis. And all for what? *Votes.* If this condition continues much longer, the Veterans' Administration will become a Frankenstein and be beyond control, even by Congress.

Since many of our Southern states have a large colored population, we are faced with a serious problem regarding their medical and nursing care. Unquestionably, we need more colored physicians and nurses, and I am frank to tell you that I think the responsibility is ours to help educate them and then insist upon a high standard of efficiency. In this connection, it might be well to remind you of the shortage of nurses and the increasing cost of nursing service. Whether

we like the idea or not, we may soon be compelled to look to the young colored women to fill our training schools.

The high cost of medical care due to the tremendous advance that has been made, and this means specialization with years of training and incident costs, as well as increased cost of everything due to inflation, has created a problem of great magnitude, and it is this very thing upon which our enemies are capitalizing in their efforts to socialize us. To offset this, we must recognize the value of non-profit, pre-payment medical care and hospital service that are directed by the medical profession; and use our influence, without selfish motives, in selling this to all, especially to those with an annual income of $3,500.00 or less. With our influence the employer will cooperate in making monthly deductions, and this should be true also for city, county, state and Federal employees. For the indigent, I am sure these plans, be they Blue Cross, Blue Shield, or any one of the many plans offered, will, with the cooperation of the doctor and hospital, so reduce the rate that they can be adequately cared for without imposing too heavy a load upon the local tax budget. When this is accomplished, we can then be assured that every citizen, regardless of race, color or creed, will be afforded medical care of the highest type without Federal control or interference.

We are all familiar with the great work that has been done by our public health organization in disease prevention. But, unfortunately, during the past few decades there has been a growing tendency to call upon the Federal Government for subsidies, until today many of our state and county organizations are being directed from Washington, notwithstanding the fact that these funds are usually allocated on a dollar matching basis. You will agree that the Federal Government should assume the responsibility of disease prevention, research and experimental studies, and when the state, county, or medical schools are asked to participate, then funds should be provided as a direct grant.

Public health means education and the prevention of disease, but we have become careless and there has been injected into this program, both nationally and locally, the idea that this must be the agency through which patients are treated. Further, the state health departments are frequently made the agents for Federal Government subsidies and thus become a part of a political bureaucracy. The many evils connected with our health departments must be corrected. In fact, we should advise rewriting all laws pertaining to health in most states because they are antiquated, and all too often place this important work under Federal domination. A correlation of all laws pertaining to public health, the practice of medicine, dentistry, pharmacy, nursing, and so on, would seem timely, and I think we can and should appoint a committee to work with various state medical societies in attempting to correct many of the obvious evils that exist.

Committees have been appointed in the Southern Medical Association on Medical Education, with Dr. Hugh Wood of Atlanta, as Chairman, and a Committee on Doctor-Hospital Relationship, with Dr. J. B. Lukins of Louisville, as Chairman. These committees have done splendid work but their efforts have been largely nullified, for after Council approval, the members were privileged only to read the reports which appeared in the JOURNAL, since it is customary to forego reading the Council's report at a general session. Both of these gentlemen, realizing the importance of these problems, have indicated a desire for meetings where these and other matters may be freely discussed by a large representative group of our members.

Perhaps one of the most tragic mistakes made by most medical societies (and ours is no exception) is the lack of appreciation of the Woman's Auxiliary, with its great interest, ability, and willingness to assist us in our crusade to improve community health; to provide better care of the indigent through group insurance on the state and county level, and finally in the fight against socialism. All the Auxiliary wants is an opportunity to serve; therefore it is our responsibility to assist the women in planning their work and to see that sufficient finances are provided to complete the job. Need I remind you of the great work done by the wives of physicians in Florida and Maryland, and the prominent role the women played in

the recent national Democratic and Republican conventions.

I say to you, the time has arrived for a militant Southern Medical Association which, by reason of the Association's non-political and non-sectarian stand, and its independence from other medical groups, can proclaim the truth unafraid and be instrumental in leading a crusade to improve the physician's economic status and help the people to maintain their sovereign rights. To accomplish this task effectively, we need to increase our membership. With 50,511 doctors in the states comprising the Southern Medical Association, we should, and could, have 20,000 or more members if only a concerted effort is made to contact the doctors individually and acquaint them with our organization and the opportunity that is offered for real service to the patient and profession alike. With the increased finances provided by the increase in membership, we could well afford a full-time physician who would be a liaison officer between our Association and the profession of the South. I am sure such an officer would stimulate interest and increase our membership tremendously without necessarily taking part in the business affairs of our Association.

Since I had the honor of serving on the Council of this organization many years ago, I have constantly maintained a keen interest in the affairs of the Association, and in keeping with this study and thought, I am presuming to offer suggestions that I believe will result in increased interest.

While recuperating from a serious illness last winter, I decided to ascertain if possible the thinking of many leaders of our organization relative to enlarging our field of usefulness. To this end, I mailed 138 questionnaires to a group which included committee members, elective officers (except the Council), sectional officers and past officers, and much to my delight I received 98 replies. This questionnaire dealt largely with our participation in educational and doctor-hospital relationship, and all economic phases of medicine.

When I submitted the result of this study to the Executive Committee of the Council at the Miami Meeting in January it was apparently received with a negative reaction, or at least I must so conclude, since I have not been honored with a reply after several requests that I be furnished with a copy of the minutes of that meeting. Unfortunately, on account of my physical condition it was necessary for me to retire before action was taken.

I think this report is quite significant since approximately sixty-seven per cent of those who answered the questionnaires recognized the need for change in the affairs of the Association. The exception was to question 5. Here only thirty-eight per cent voted favorably while others felt that a full-time physician should not be employed while Mr. Loranz remains active.

To meet this mandate of such a representative group, I am recommending a change in our constitution and by-laws, a change that will be more democratic by placing some of the responsibility of the Southern Medical Association in a proposed house of delegates, a body to be composed of the board of trustees, elective officers, officers of the various sections and officers of the Auxiliary, making a total of more than seventy representative members. This group would become a fact-finding committee for the Council, and before this body the committees appointed by the president would make their reports. Here also the Auxiliary would present its problems. In fact, any member could present ideas for the advancement of the Southern Medical Association. Here a free and full discussion on these problems could be had by a representative group, and the conclusions reached should be most helpful to the Council in reaching final decisions.

With the idea of getting away from too much centralization of power, provisions are made to eliminate the Executive Committee of the Council and to place the responsibility for handling the affairs of this organization in the hands of committees of the Council, such as finance, publication, meetings, and so on, with the Chairman of the Council being an ex-officio member of these committees.

The whole philosophy in asking for these changes is simply to keep more of the members busy and let them have some appreciation of the business of operating a large medical association such as ours, because, at the present time, I am sure no member or officer

has the faintest idea as to the real problems involved, or the cost incident thereto. In addition, such a move would help dispel the idea of too much centralized power. Remember, we cannot always have our able Secretary-Manager and Editor. Now is the time to make some changes so we can effectively carry on the business of this organization when the need arises. The Southern Medical Association is a great medical association with a tremendous potential power that has never been developed; therefore, I urge you to support the changes so this latent force may be used for the benefit of all the people in our Southland.

If I were asked to name the responsibilities facing the Southern Medical Association today I would unhesitatingly say:

(1) *Health.*—Adequate medical care should be available for all people, regardless of race, at a cost commensurate with ability to pay. We must insist upon enlarging our program for preventive medicine under the state and county health departments, and this means education, not treating disease, and the program should be operated without Federal control or interference.

(2) *Citizenship.*—Community responsibility. This means an insistence upon decent and clean government, beginning at the grass roots and extending all the way to Washington.

(3) *Education.*—This must be all inclusive and will require most intelligent study and positive action if we are to prevent Federal subsidy and control.

(4) *Doctor-Hospital Relationship.*—Much educational work needs to be done, and then a firm, positive stand must be taken by organized medicine if we are to prevent hospital domination of the physician. And in this connection we must recognize the fact that the medical schools and Veterans' Administration are the greatest offenders.

(5) *Southern Medical Association.*—In the Association itself, the importance must be generally recognized of increasing our membership and then taking a fearless, positive stand on all matters, political or otherwise, that vitally affect our future.

1119 Sixth Avenue

THE MISSISSIPPI STATE MEDICAL EDUCATION LOAN FUND*

By D. S. PANKRATZ, M.D.†
University, Mississippi

This paper is a brief statement of what the Mississippi medical education program means, not only to Mississippi, but to all those interested in obtaining more doctors for rural areas and in helping deserving medical students to enter this field of service.

Too often, we in Mississippi see, hear and read references to our state as forty-eighth in one category or another. This has been and is yet all too true in certain fields and instances. But in the field of obtaining physicians for rural areas by assisting medical students to meet the costs of their education, Mississippi is first. Other states, for example, North Carolina, South Carolina, Virginia and Kentucky have followed Mississippi's lead. Alabama has had a county scholarship program for many years; and Georgia, Arkansas and Texas are in the process of establishing some type of medical education scholarship. Most of these groups have consulted our staff for information and assistance in this work.

For many years prior to the passing of the legislation authorizing this program the number of physicians in Mississippi had been declining. World War II did not change the statistics much except to make a bad situation worse. With the return of doctors from military service, Mississippi still found itself with an inadequate number of physicians for the population of the state. For the past six years Mississippi has annually lost some forty doctors by death. In the sections classified as rural areas, according to House Bill 431 authorizing our loan program, there is one active physician for approximately 3,200 persons. According to House Bill 431, a rural area is a town or area with a population of 5,000 or less. In Mississippi there are only 23 towns of more than 5,000 population. In these 23 towns live almost one-half of the state's physicians.

*Chairman's Address, Section on Medical Education and Hospital Training, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

*This paper was prepared with the help of Maria Voskamp, Executive Secretary of the Scholarship Board.

†Chairman of the Mississippi State Medical Education Board, and Dean, University of Mississippi School of Medicine, University, Mississippi.

The age of many Mississippi physicians accounts for the high death rate in our physician population. The reason for this high death rate is apparent when we note that 48 per cent of the rural physicians of the state are 60 years of age and over.

Mississippi has 50 Negro physicians, according to the latest statistics available. According to the 1950 Federal Census, Mississippi has a Negro population of 986,707. You can see that we need many more physicians of the Negro race. Of the 50 Negro physicians now in the state, only 12 are located in rural areas of 5,000 population or less. The Delta section, in which lives a large portion of the state's Negro population, claims 10 of the 50 Negro physicians.

To the state of Mississippi, the program offers a practical workable means of obtaining doctors for the rural areas. To the student who is a Mississippian and who is willing to sign our state contract, this program offers an opportunity such as is offered to few students in America today: opportunity to serve both their fellow citizens and themselves.

Under the legislation authorizing this program, which was established in 1946, any Mississippian, man or woman, may apply for a loan not to exceed $1,250 per school year, including tuition payable direct to the school, or a maximum of $5,000 in four years. Veterans receiving tuition and subsistence payments under the GI Bill of Rights are eligible for loans of from $500 to $1,000 per year, depending upon whether the student is single, married or has a family. Loans carry 4 per cent interest. This is the largest medical education scholarship that I am aware of, and I believe its terms of settlement are the most liberal.

This loan program is not designed to assist residents of other states nor to change the goal of the young Mississippian who wishes to enter a specialized field of medicine or a specific location of practice upon which he has already decided. The basic requirements are:

(1) Need of funds to complete medical education.

(2) Completion of premedical work and an acceptance to any approved medical school in the United States.

(3) Willingness to sign a state contract to return, upon completion of a general rotation internship, to a rural area approved by the State Medical Education Board, and to remain there for a minimum period of two years, regardless of the amount borrowed. The loan is discounted at one-fifth of the student's total loan per year, the amount varying according to the total amount borrowed by the individual. If a physician remains in an approved rural area for five years the entire amount plus the interest thereon is credited to him. If he chooses to leave such an area or the state at the end of two years he may pay off three-fifths of his loan with which he has not been credited, plus interest, and be free of contract obligation. All recipients of loans are obligated for a minimum period of service of two years.

All graduates have been offered the opportunity of applying for a two-year rotation internship or a residency in general practice. A small group have availed themselves of this further education before entering medical practice. Furthermore, the physician under this program may move from one rural area to another with the Board's approval.

The State Medical Education Board charged with the just administration of this program is composed of the Dean of the University of Mississippi School of Medicine, who serves as chairman of the board by virtue of his office; the executive officer of the Mississippi State Board of Health, who serves as a member of the board by virtue of his office and whom board members elected as vice-chairman; the president of the Mississippi State Medical Association, serving also by virtue of his office during his one-year term; and two members appointed by the governor for four-year terms.

As a result of these state medical education loans, 376 men and women of Mississippi have received benefits to date. This is a carefully picked group, selected from approximately 1,700 inquiries and applications. These students have come from 80 of the 82 counties of our state and many are still resident in their home county.

Results of a recent study show that more loan recipients are sons of those engaged in agricultural pursuits than any other group. In the professional rank, more physicians' sons

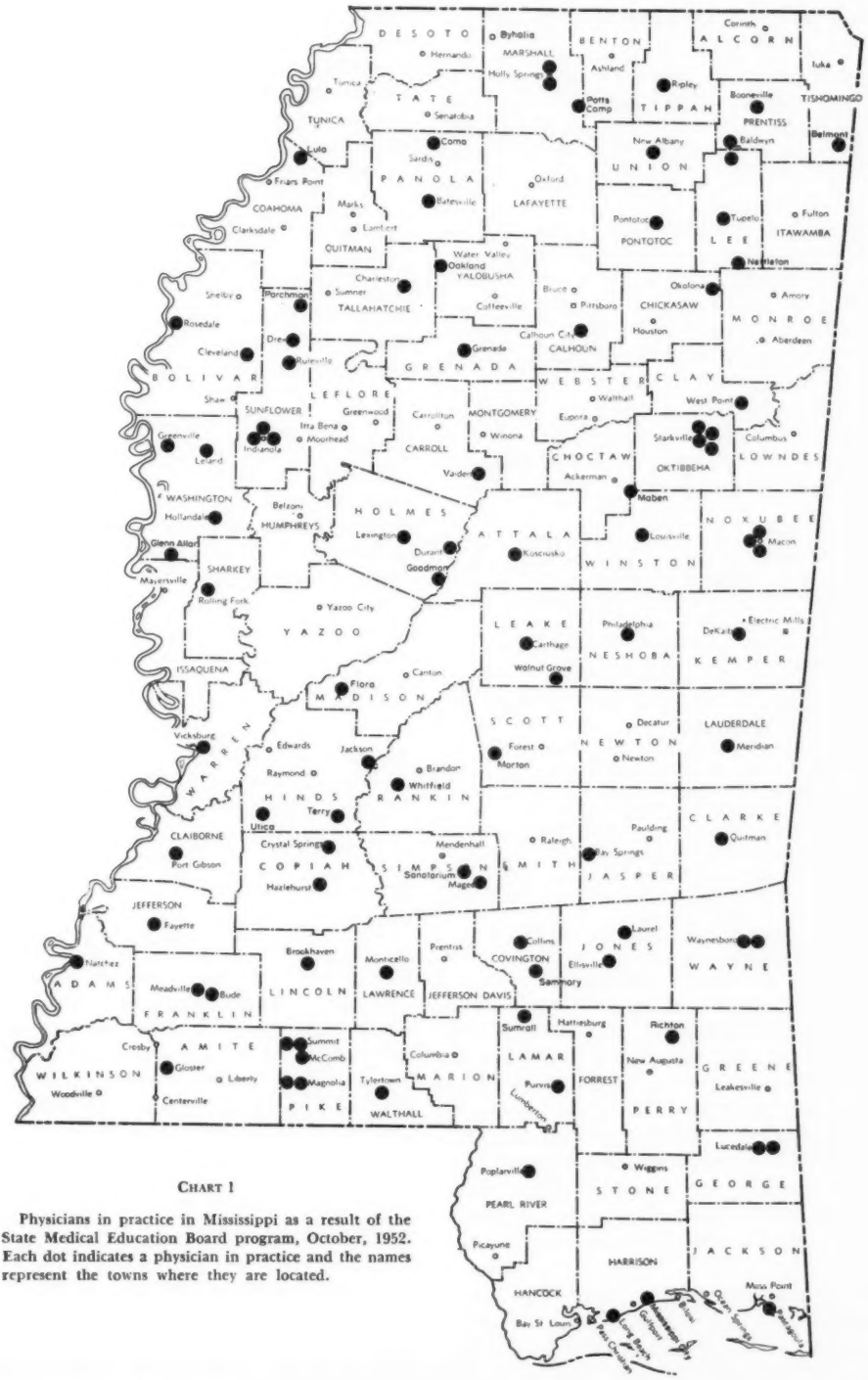

CHART 1

Physicians in practice in Mississippi as a result of the State Medical Education Board program, October, 1952. Each dot indicates a physician in practice and the names represent the towns where they are located.

are loan recipients than sons of any other professional group.

Reasons given by loan recipients for the study of medicine reveal the dominant influence of parents and physicians. Interest since childhood is also a primary reason, while the desire to help others reveals the altruistic motives of many.

Fifteen loan recipients are women (8 educated for practice; 5 in active practice; 3 interns; 4 in school). Twenty-three are Negroes, one of whom is a woman. Nine Negroes have been educated for practice; 8 are in active practice; 1 is in military service; 2 are serving internship; 11 are in medical school.

Approximately 200 students are attending 24 medical schools throughout the nation. The largest group is enrolled at the University of Mississippi School of Medicine. Other schools are:

University of Alabama School of Medicine
Baylor University College of Medicine
Bowman Gray School of Medicine
Columbia University College of Physicians and Surgeons
Cornell University Medical College
Duke University School of Medicine
Emory University School of Medicine
George Washington University School of Medicine
Harvard Medical School
Howard University College of Medicine
Indiana University School of Medicine
Jefferson Medical College
Johns Hopkins University School of Medicine
Louisiana State University School of Medicine
Meharry Medical College
Northwestern University Medical School
University of Pennsylvania School of Medicine
Southwestern Medical College
University of Tennessee College of Medicine
Tufts College Medical School
Vanderbilt University School of Medicine
Washington University School of Medicine

As of August 1, 1952, a total of 116 young physicians have been educated for practice as a result of this program. This figure includes 98 in active practice at the present time, of whom over 80 per cent are located in rural areas. Forty-four per cent of the 98 physicians recently licensed by the Mississippi State Board of Health were state loan recipients. Approximately a dozen are in military service. A few have repaid loans, three have been taken by death, and a few in other ways have failed to fulfill contract obligation. A small per cent have been approved for general practice in state charity hospitals and in public health. The 116 mentioned above came from 59 counties of our state. Those in practice are located in over 50 counties of the 82 in Mississippi. The chart illustrates the location and distribution of the physicians who are scholarship recipients. Over 50 young physicians now serving an internship in nearly 30 hospitals of 20 cities of the United States will finish their training during the fall and winter of 1952. These interns will be in practice by June 30, 1953. They are the only additional young physicians of whom the state of Mississippi can be certain, for they are the only Mississippi medical students who have signed state contracts to return to rural areas of the state for medical practice.

We feel that the leaders of our Legislature in 1946 were farsighted and progressive in establishing this program. Honorable Walter Sillers, speaker of the Mississippi House of Representatives, conceived the idea and wrote the bill for the Mississippi state medical education scholarship loans.

We are glad that Mississippi has been the first to take concrete steps to meet a problem which faces the rural areas of our entire nation.

THE GEORGIA CIVIL DEFENSE HEALTH SERVICES PLAN FOR THE TREATMENT OF MASS CASUALTIES*

By E. M. DUNSTAN, M.D.
Atlanta, Georgia

Physicians were the first to recognize and call attention to the urgent need for civil defense planning on a nation wide basis. The public instinctively expects physicians to play a leading role in this connection, and derives much peace of mind in this assurance. The American Medical Association is constantly urging its membership to assume these leadership responsibilities.

Civil defense planning entered a new phase with the establishment in December 1950 of the Office of Civil Defense Administration directly under the President, and the appointment of Mr. Millard Caldwell, Jr., formerly Governor of Florida, as administrator. Since then practically all of the states

*Read in Section on Public Health, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

have enacted legislation setting up their respective state civil defense divisions and these are now engaged in the gigantic, and often discouraging, task of mobilizing and training the population at large in civil defense.

The inescapable civil defense responsibilities of physicians may be classified briefly as follows:

(1) Know the special medical problems in connection with special weapons defense.

(2) Be thoroughly familiar with the state and local civil defense health services plans, the integration with other civil defense services, and volunteer for the civil defense health services corps, or its equivalent. Learn not only one's particular civil defense job well but as many other jobs as possible because of the great casualty rate expected among physicians.

(3) Engage intensively in the training of auxiliary professional personnel, such as dentists, veterinarians and others, in casualty handling in emergencies.

(4) Do one's part and see that the profession as a whole assumes the responsibility for the training of the vast number of non-professional health workers that will be needed in case of atomic disaster. In this connection, encourage women's auxiliaries to assume leadership in first aid teaching and in liaison work.

(5) Inform one's patients and the population at large the true facts about atomic, biological and chemical warfare, stressing the effective defense measures available and thus contributing to avoiding panic later.

The medical profession of the state of Georgia is meeting its obligations in this connection by having participated intimately in the formulation of the Georgia Civil Defense Health Services Plan and its present implementation. Since there are mutual civil defense assistance pacts between the Southeastern states, it was thought wise to present an outline of the main features of the Georgia plan to this key group of physicians, so as to facilitate the vital work of mutual aid and mobile support.

The plan is simple, comprehensive, and can be implemented within our limited economic capacity. It will be given in summarized form below.

GENERAL

(1) Functional organization at all levels should follow those recommended in Publication AG-11-1, *Health Services and Special Weapons Defense,* prepared by the Federal Civil Defense Administration. The health officer, where there is one, should be the director of the health services and a practicing physician should be an assistant director in charge of the medical services. There should be an advisory committee composed of representatives of the medical, dental and other allied professional and technical groups directly concerned. In order to facilitate mutual aid and training, the recommended plan is uniform for target as well as non-target areas since the latter will provide evacuation facilities and other vital support.

(2) The State Civil Defense Health Services Division is directed by the state health officer with a deputy director in charge of administration, including plans and organization, mutual aid and mobile support, and liaison in training, communications and transportation. The four main branches are: medical services; public health services; special weapons defense; and health supplies. Each branch has its staff and the corresponding units of the Civil Defense Health Services Corps, as shown below.

(3) The five regional health officers and their civil defense staffs, with headquarters in Rome, Athens, Macon, Waycross and Albany, will act as alternates of the State Civil Defense Health Services Division Staff and thus provide for the necessary decentralization. The regional staffs will be responsible for the operation of the state plan in their respective regions.

(4) The following training manuals giving detailed instructions about the different phases of the plan are available or almost completed: Manual for Organization of Improvised Civil Defense School-Hospitals; Hospital Manual; Management of Non-Casualties; Mobile First Aid Units; Casualty Treatment and Evacuation; Standard Operating Procedures of the State Civil Defense Volunteer Health Services Corps; the Nurse in Civil Defense; Special Weapons Defense; Public Health Services; and Health Supplies. Pictorial exhibits will be available for rapid and wide dissemination of information. Ra-

dio and television should be utilized extensively and so should newspapers and magazines.

(5) The plan comprises two major phases: the "Self-help and Neighbor-help" phase and the "Professional and Technical Assistance" phase.

SELF-HELP AND NEIGHBOR-HELP PHASE

(1) The schools throughout the state are to be used as improvised hospitals with the personnel of each school district organized by its respective parent-teacher association with the assistance of the school staff, all of whom should be trained, as soon as possible, for these new duties. This vital assignment will undoubtedly serve as a powerful stimulus for organization of parent-teacher associations in all the schools in the state. A map of the school and its surrounding areas is to be posted prominently in the school to show proposed utilization of floor space for casualty treatment, locations of reserve supplies in neighboring homes, and other essential information.

(2) The parent-teacher associations are to catalog the skills available in their districts and use them to the best advantage. They should have as their first objective to cooperate with the overall Georgia Civil Defense Home and Family Plan, which has the widespread support of women's clubs throughout the state, in seeing that every home in their district has at least one person trained in the Red Cross first aid course, and that each home also has the recommended first aid kit and "Instructions for Survival Under Atomic Attack" prominently posted in the shelter area, with extra cots and supplies. They should also see that every block, or its equivalent in the rural area, has at least one person trained in the Red Cross home nursing and one in the Red Cross nurses' aid courses to work with headquarters at the block first aid station under the direction of the block warden; these are to be in addition to the ones trained for school-hospital duty and will thus constitute a good reserve.

(3) The grammar school districts are to be grouped around the respective area high school districts and these in turn are to be affiliated with assigned existing hospitals. This will provide for the professional and technical assistance necessary for training and operations. A minimum of one physician and one nurse will be assigned by the parent hospital to each school for training purposes.

(4) Repeated drills at regular intervals should be instituted with the participation of the staff of the parent hospital. Training manual study periods should also include basic knowledge about atomic and other explosive weapons, biological and chemical warfare, and defense measures against these agents. Improvisation of equipment and supplies, with appropriate storage, should be standard practice. Since the health service is the common denominator affecting all individuals, the opportunity should be utilized to have these drill periods also include instruction about the other civil defense services and the high degree of coordination which is essential.

(5) Particular reference is made to the close coordination with the emergency welfare lodgings in the churches and the welfare non-casualty intermediate evacuation centers in the American Legion posts and other specified assembly points, all of which will have an attached first aid station. American Legion posts and auxiliary personnel will largely staff the welfare non-casualty evacuation centers. The welfare lodgings in the churches will be staffed generally by church personnel. The attached first aid station will be staffed by neighborhood school district professional and technical personnel. Where possible, a nurse supervisor will be assigned, and probably the part-time services of a physician. Good standing orders in this connection can be found in the manual "The Nurse in Civil Defense."

PROFESSIONAL AND TECHNICAL ASSISTANCE PHASE

(1) Existing public health facilities are to be expanded for civil defense purposes and training facilities set up to provide the large number of auxiliary volunteer workers that will be needed.

(2) Existing hospitals will fill key positions in training and operations. Each hospital will first appoint a civil defense chief of staff, set up its medical disaster staff as outlined in AG-11-1, and prepare as soon as possible a comprehensive disaster plan to include standard operational procedures so

that all concerned will know their duties when disaster strikes. The plan should provide for maximum expansion of present bed capacity and for evacuating occupied beds if disaster strikes, including utilization of surrounding buildings. Each will train additional technical personnel, and establish refresher courses to the limit of its resources; will organize medical corpsmen and nurses' aid courses; will increase by 75 per cent, if possible, the reserve supplies carried; and will be prepared to channel Federal supplies as needed and available. Each hospital will establish close liaison with its affiliated improvised hospital system in the schools, described in the self-help and neighbor-help phase; appoint the personnel which will furnish the professional and technical instruction and overall guidance needed, beginning with a minimum of one physician and one nurse for each affiliated school-hospital; assist in making continuous inventory of existing and reserve supplies and equipment available in their areas, and advise on improvisation of same. Each will arrange for periodic disaster plan meetings and practice runs, including demonstrations for their affiliated improvised hospital system.

(3) The local civil defense volunteer health services (CDVHS) corps will be composed of all medical, dental, and allied professional and technical personnel residing in the respective localities who will accept the responsibility to be available for emergency civil defense duties at all times. Its activities in time of emergency will be directed by the health services division of the city civil defense control centers which are being established in the periphery of Georgia cities. In the interim, this corps will be actively engaged in self-training and training of auxiliary technical and lay personnel. The units of the corps are seen in the appropriate organization chart.

(4) The state civil defense volunteer health services (CDVHS) corps will be composed of approximately 50 per cent of the units of the local CDVHS corps of specified communities and will operate directly under the state director of civil defense through the health services division of the state civil defense control center. The composition of this corps is shown in the appropriate organization chart. When called into action, units of the corps will report to the local control center specified and remain under its direction until the assignment is terminated. The local components of this corps will not be called for duty elsewhere when its own community is the scene of a major disaster.

(5) Personnel of the different units of the state CDVHS corps will be selected by a committee composed of the local civil defense health service director, the regional public health director, and the chief of the particular service concerned, who will make the initial nominations.

(6) The main units of the CDVHS corps are:

(A) *Medical Service Branch.*—Parent hospital professional staff (local); special teams (from parent hospitals): receiving and sorting, shock, radiation sickness, non-casualty treatment, blood bank, burn, trauma, anesthesia service, and operating room teams; high school professional staff; grammar school professional staff (local); emergency lodgings (churches, welfare, local); control center personnel pool (local); mobile first aid (American Legion sponsored or co-sponsored); non-casualty evacuation center professional staffs (welfare); consultant and special groups, including: the various medical specialties, dentists, dietitians, laboratory technicians, litter bearers, medical corpsmen, medical school technicians pool, nursing groups, optometrists, osteopaths, pharmacists, physiotherapists, physicists, radiation monitors, veterinarians, x-ray technicians, etc.

(B) *Public Health Services Branch.*—Sanitation; industrial health; housing hygiene; laboratory; nutrition; mortuary; public health nursing; veterinary; vital statistics; and water pollution.

(C) *Special Weapons Defense Branch.*—Biological defense; chemical defense; and radiological defense.

(D) *Health Supplies Branch.*—Medical and surgical supplies; blood and blood derivatives; sanitation supplies; and mortuary supplies.

TRAINING OBJECTIVES

(A) *Non-professional.*—(1) The Red Cross First Aid Course is prerequisite for all health services personnel. The American Red Cross has accepted this training responsibility and will furnish instruction upon request.

(2) Personnel assigned to designated services will become thoroughly familiar with the respective training manuals, will put these into effect, and engage in practice runs and on-the-job training wherever feasible. The professional personnel assigned will supervise the follow-up training.

(3) In the case of the medical services, initially approximately 25 per cent of the personnel should receive advanced training in the 80-hour Red Cross nurses' aid or the medical corpsman courses. Hospitals will be urged to set up these courses on a rotating basis so that instruction is continually available to new groups being recruited.

(4) College faculties are asked to encourage their students throughout the state to take the Red Cross first aid course and as many as possible should take the 80-hour medical corpsman or the nurses' aid courses. They will thus constitute a readily accessible pool for use with mobile first aid units. Biology, chemistry and physics majors can also be trained as laboratory and x-ray technicians. College faculties are also asked to take a leading role in guiding the citizenry at large to understand the underlying nature of this new way of life that has been forced upon us and the urgent necessity of enlisting with zeal and enthusiasm in the crusade to protect our heritage.

(5) High school students throughout the state are being trained as airplane spotters, but it is felt that once disaster occurs they could be of great assistance with the mobile first aid units if they receive training in the Red Cross first aid course.

(6) All training is to include special weapons defense, basic disaster psychiatry, and coordination with other civil defense services.

(7) The Civil Defense health service schools in Atlanta and in the public health regions will coordinate the training of the key personnel concerned.

(B) *Professional.*— (1) Standard operating procedures (SOP) for all units of the civil defense health services corps are being prepared. This will also include: SOP for regional and state-wide joint exercises where the teams participating will be transported by the mobile first aid units; and SOP regulating employment of the units when called into Federal service for duty outside the state.

(2) A 12-hour orientation course outline in special weapons defense for physicians has been prepared by the Federal Civil Defense Administration and is available for use throughout the state.

(3) Special courses of instruction in emergency procedures are being set up in community hospitals for the training of dentists and other specified groups.

(4) "Manual of Treatment" prepared by the National Research Council standardizes treatment procedures for mass casualties and is to be used extensively in developing all professional courses.

(5) The technical manual "The Nurse in Civil Defense" is serving as a guide in developing similar manuals for other specialty groups.

(6) Medical school faculties are asked to encourage medical students, and as many premedical students as possible, to train in laboratory and x-ray work, in addition to first aid work, and thus be available wherever needed throughout the state. Medical school faculties are also asked to advise continuously on standardization.

(7) The follow-up training is most important:

(a) The hospital civil defense chiefs of staff will play a leading part in the respective periodical hospital disaster plan meetings and should plan as soon as feasible to incorporate civil defense instruction as a regular item in the monthly professional staff meetings.

(b) The hospital field inspectors from the state hospital services division will keep hospitals throughout the state informed of overall plans and assist them with their problems in implementing these.

(c) The woman's auxiliaries of the state and county medical societies, and the Better Health Council where there are no auxiliaries, will work continuously in improving liaison between lay and professional groups, specialize in first aid instruction, etc.

(d) The professional personnel assigned to the various units will supervise the training of these units and see that this progresses satisfactorily.

SUPPLY AND TRANSPORTATION

Supply.—One central state stock-pile is being planned. In addition, since Atlanta is headquarters of the Southeastern Region (No. 3) of the Federal Civil Defense Administration, it is anticipated that one of the

large Federal stock-piles will be near this city. In the meantime, the Army has one of its main supply depots at Conley, Georgia, near Atlanta, and presumably can be expected to furnish initial emergency supplies until other resources can be mobilized.

Locally, the key word is improvisation. The Manual for Organization of Improvised Civil Defense School-Hospitals gives the details of how this should be done. The Health Supplies Manual will give further information. The important role of hospitals in this connection is discussed above. Food supplies come under jurisdiction of welfare services.

Transportation.—Civil Defense health services at present have been allocated laundry and milk trucks (which can in case of disaster empty their loads at the nearest school and be converted into ambulances), school buses, and the regular ambulances. Other transportation will be allocated as available by the Civil Defense Transportation Division.

OPERATIONS IN CASE OF DISASTER

The degree of implementation will depend on the extent of the disaster. Assuming full implementation and purposely simplified:

(A) *State at Large.*—The self-help and neighbor-help and hospital personnel will proceed to their respective stations and prepare to receive evacuees. Units of the state Civil Defense health services corps will stand by and await orders as needed.

(B) *Non-Bombed Target Area.*—(1) The trained self-help and neighbor-help groups will listen for radio instructions from the city control centers and, as soon as possible, will proceed to their stations in the respective improvised school-hospitals and set these up for receiving casualties. Some of the personnel in the more peripheral hospitals may be temporarily ordered by the control center to assist in setting up additional improvised hospitals nearer to the disaster area.

(2) Remaining hospitals will put their disaster plans into full operation.

(3) The local and state Civil Defense health services division staffs will proceed at once to their respective control centers.

(4) The local Civil Defense volunteer health services corps units will proceed at once to their assigned stations, or, if this is impossible, to the nearest control center.

(5) The designated peripheral hospitals will rush obstetrical packs to the existing improvised school-hospitals nearest the disaster area and to other stations in the routes of evacuation to be used as needed as the evacuation of the eighth and ninth month pregnant women and children below the seventh grade proceeds.

(6) During this time the control centers, which are composed of representatives of all the civil defense services, have ascertained the extent of the damage and are in constant communication with mobile two-way radio trucks at the disaster scene and monitors with walkie-talkies. If the disaster exceeds the local capacity to take care of it, the local civil defense director asks for aid from the state civil defense director. Units of the state Civil Defense volunteer health services corps will then be ordered to report to the local civil defense director and his health services deputy and remain under his direction until released. The mobile first aid units ordered in will bring in the additional litter bearers and medical corpsmen which may be required. The state control center, in consultation with the local control center, will jointly determine the extent of casualty and non-casualty evacuation that will take place and issue directions accordingly.

(C) *Bombed Area.*—(1) The trained self-help and neighbor-help personnel who are not injured will report to the nearest intact suitable buildings and begin setting up first aid stations with the assistance of personnel sent in from the control centers. The disaster area should be "ringed" as soon as possible with these and with mobile stations to give first aid to the great number of walking casualties and act as "filters" for the school-hospitals. By this time the control centers have radioed instructions to set up additional improvised hospitals in existing buildings near the disaster area, and the personnel available will proceed to do this at once. The remaining non-injured personnel will then act as litter bearers bringing the injured to these first aid stations and improvised hospitals.

(2) Individuals who were stunned but not physically injured will be taken to the welfare lodgings in the churches and other designated places and there will receive the spiritual and psychological help which will enable them soon to assume active roles in the care of the injured, putting out fires, and other civil defense services which will be urgently needed.

(3) The physically injured, as mentioned, will be taken by the above mentioned personnel, supplemented by litter bearers, mobile first aid units, and other personnel sent in by the control centers, to the first aid stations and improvised hospitals "ringing" the disaster area and from there handled in accordance with the following principles.

PRINCIPLES OF CASUALTY HANDLING IN EMERGENCIES

(1) Triage consists of the sorting and directing of casualties, such care of the wounded being a continuous process from the first aid station to final return to civilian life.

(2) Priority and non-transportable casualties consisting particularly of penetrating chest, abdominal and major vascular wounds, are best handled in priority hospitals set up in high schools away from the major casualty flow where operating facilities should be available for at least three teams to work simultaneously.

(3) The moderately wounded will require dressings at improvised hospitals, treatment of shock with plasma or fluids, readjustment of bandages and evacuation from the center to the periphery, probably by air, ambulance or train to nearby towns.

(4) The lightly wounded will need local handling, careful debridement, chemotherapy and out-patient care. They will have to assist in the local efforts at fire fighting, rescue, etc.

(5) Debridement consists in skin incision along normal cleavage planes, the liberal opening of deep fascia and muscle splitting, the removal of damaged tissues and indriven foreign bodies, leaving the wounds open and bandaging them. Closure of such wounds can be accomplished later. Hemostasis is best accomplished with fine catgut ligatures.

(6) Burns will be dressed initially by first-aid personnel and their dressings will have to be adjusted at improvised hospitals, their pain relieved, antibiotics given and their shock treated before evacuation.

(7) Shock is best treated by rest, Trendelenburg position, plasma and blood if available. Oral fluids can be given in the absence of chest and abdominal penetrations.

CONCLUSION

It is in keeping with honored tradition that we as a profession continue to measure up to the leadership responsibilities expected of us in this vital field of civil defense, beginning with the formulation and implementation of adequate and comprehensive state health services plans which will make provision for effective mutual aid and mobile support to surrounding states.

DISCUSSION *(Abstract)*

Dr. John M. Whitney, Atlanta, Ga.—I have noticed, since I have been assigned to responsibility for civil defense in this region, that there is a good deal of lack of public knowledge not only as to what civil defense is, but as to whether it is needed or not. Perhaps many of us have asked ourselves the question: why are we doing this, or why should we do this, particularly in the face of lack of encouragement on a national level, where perhaps members of our own Congress are not too enthusiastic about it.

In any type of casualty management, of course, they all would be based on the same principles, the principle of a person's helping himself, helping members of his family, and then helping the neighbors on his block, until it gets into the organized professional health system. We might consider for just a minute what such a system depends on.

Any type of operation, of course, depends on two things: the people who must know what to do, and then the tools or equipment or supplies with which to do it. We try to make as detailed plans as we can where everyone will be told exactly what to do and will have a job to do, but unless that person has been trained to do that and unless he has something to do it with, then we shall not get very far.

We know that civil defense has a few basic principles. It does not take much of a perusal or study of what happened in Nagasaki and Hiroshima to see what the magnitude of the task would be if just one atomic bomb should happen to fall on one of our cities. When we stop to think about what actually has won the last two wars for this country, we find that it has been our industrial capacity and production. That is actually what has pulled us out on top and any enemy who is smart, and we are not going to make a mistake, I think, of assuming that our enemies are

not intelligent, is going to know ahead of time that the only way that he can whip us, the United States, is to hit at our industrial production and our industrial facilities. I believe in the last war it took ten men or women working at home, to support every man we had at the front.

Assuming that a potential enemy has enough intelligence to make that assumption, then we can see that some sort of a plan must be set up in order to protect our industrial potential as well as the lives of our citizens. We know that no community is self-sufficient, no area is self-sufficient, but the basic principle of civil defense is that each city and each area must be prepared to help the other city or the other area because we do not know who will need the help. We hope we shall never have to go into actual operation on things that we are planning to do, but we must be prepared to undertake some sort of civil defense program and operation that could save us from utter catastrophe.

You may have heard General Vandenberg's statement that no air defense can stop more than 30 per cent of an attacking bomb fleet, and it would be inconceivable that the enemy would just drop one bomb on one place. So when we get right down to it, the Congress has given the responsibility for the development of civil defense to the states as sovereign states. They have given them little help in the form of money with which to do it. However, there are federal funds on a matching basis available for specific categories, not only for buying equipment and supplies, ranging all the way from air wardens' down to medical supplies, but also for setting up the training programs that Dr. Dunstan has discussed.

Dr. Joseph E. Schenthal, New Orleans, La.—Most physicians are called on to take part in community affairs and especially in the handling of community disasters. Most of us recognize the importance of interim planning for handling casualties in civil defense and natural disasters, and many professional persons have given much time and experience to developing such programs. A number of us have been impressed by the importance of adequate planning after studying natural disasters such as occurred in Kansas City and Texas City. Actually, in many communities everyone is aware of the need to utilize such well designed programs by combining both civil defense and community natural disasters. It is my impression that many physicians are disappointed in the local community's lack of follow-up, once programs are initiated. The financial backing of the program is withdrawn with inadequate means to maintain the program. Few communities realize the discouraging effect this has on the professional persons taking part, and that there is a loss of valuable personnel through loss of interest. I wonder whether a public educational program might be carried out upon the fact that public health measures of tremendous importance can be seriously damaged by those controlling community budgets, this, of course, being done before budgets are decreased.

Dr. Dunstan (closing).—Dr. Schenthal points out that most states, including Louisiana, distinguish between natural disasters and those brought about by enemy action. The civil defense organization comes into action only in the latter case, leaving the former to be cared for usually by the American Red Cross. This allocation of responsibilities applies also to Georgia, and I agree that there is much wasted effort in not utilizing the civil defense organization in all types of disaster.

In a significant editorial in connection with the recent Kansas-Missouri flood, the *Journal of the American Medical Association*, of November 24, 1951, commented on the desirability of changing local legislation to allow civil defense authorities to act, not only in wartime, but in any major disaster. We agree with this and are trying to influence the proper officials to accomplish this change.

Now, with reference to funds to do this work, there are matching funds available, as mentioned by Dr. Whitney, and these should be set up and used systematically. However, I want to point out that we should not delay the training programs while waiting for funds to carry out elaborate stock-piling.

We are at present concentrating on setting up demonstration units in key places and urging communities to make maximal use of improvisation. By building the training program around existing hospitals, we further simplify the problem, since they already have available much of the demonstration and teaching equipment for their own educational programs.

STARS IN THE HEAVENS*

By J. P. SANDERS, M.D.
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Pharaoh had two dreams. None of the soothsayers, magicians, or the greatest scientists of his time could give the proper interpretation. His butler finally told him about the Hebrew boy, Joseph, who had befriended him in prison two years before. Joseph was brought before Pharaoh and asked if he were an interpreter of dreams. Joseph replied, "No, but God is."

In the first dream, Pharaoh saw seven fat cattle devoured by seven poor cattle. In the second dream he saw stalks of corn with seven ears devoured by stalks with seven scrawny ears. Joseph predicted seven years of plenty and seven years of famine. Pharaoh was wise enough to accept Joseph's prediction and prepared for the seven-year famine to follow. Joseph, under the guidance of God, built great granaries, great storehouses, bought up the surplus grain at a fair price, and prepared for the time of need. The nation, as well as the surrounding peoples, was saved, by this great planning.

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In contrast, we saw eleven years of plenty following the first World War, (under the Republicans), and then eleven years of famine (under the Democrats), saved only by the second World War. The seven years of plenty since the second World War has overshadowed anything that Egypt ever knew. Why do we not plan for the seven-year famine, or whatever this number of years will be, that is sure to follow? Why can not the Americans be so wise as Joseph was in Egypt?

A GENERATION LOST

The present day difficulties probably date back to the great depression of October, 1929, twenty-three years ago. The reasons for the depression are manifold, but it is generally agreed that it was based on man's loss of faith, loss of morality, loss of integrity, and finally, that we forgot God.

Certainly, man's lust for money and power had a great deal to do with it. Many great industrial concerns, banks, large stockholders, and many other people with money considered it an opportunity to freeze out the small shareholder and take over the whole business unto themselves. There was a general letdown in morality all over the world. Immorality appeared for the first time in government on a large scale. We saw high officials in the Harding administration dismissed, prosecuted, and sent to prison for dishonesty. While there was little or no protection from the higher-ups during this period, there were definite signs of lack of integrity among high officials.

This was a period of the noble experiment, prohibition. Gangsterism rose to its highest peak. Enforcement officers were bought off as you would buy a sack of potatoes. But it seems in retrospect that neither political party was responsibile for this terrible situation.

This same period also marked the rise of socialism all over the world. It is true that Russian communism started right after the Russians folded up during World War I. But communism never got a complete hold on the nation until about the end of their second Five-Year Plan, which probably dated around 1928-29. Fascism in Italy rose under Mussolini, who came into power in 1925, but reached its peak in the early 30's. Hitler came into power in about 1932 or 1933 in Germany, and with him, Naziism. Nationalism in Japan took hold there in 1933, when the war lords of that country took over. Dealism in the United States started definitely in 1933.

The rise to power of all these socialist leaders was largely through labor organizations. The dictator was a leader in his own labor party. He promised party members a new era, higher wages, social security, eternal welfare. But once they were in power, they all followed the same pattern. Labor unions were disbanded. The workers became as slaves to their government, and social gains were soon swept away in the face of the ever rising tide of dictatorship. They used the promise of giving people something for nothing. They took away from those who had and gave it to those who had not. Their ruthlessness was even more pronounced than that produced by capitalism in the era gone by. Human nature was the same, whether it was owners and management, or the working men themselves.

There were great changes in men's souls. These changes embodied not only national thinking, but international philosophy as well. Peoples everywhere began to be trained to destroy instead of to produce. Bureaucracies were set up to hire masses of people at public expense, but not to produce. In our own country, we saw pigs, cattle, sheep, and other food-producing animals destroyed while people starved. Crops were plowed under, and other property destroyed to please the promulgators of this new philosophy. Public ownership was recommended for utilities, transportation, and many of the other national enterprises, which had always been under private ownership. Dishonesty gradually crept in from the top. At first it was overlooked, then condoned, and finally became the principal method of procedure. Increasingly the lust for power was ever and ever more apparent.

No real attempt was made during this whole period to bring us out of the depression or cure the country's ailments. Instead, the rulers were constantly taking unto themselves more authority, depriving the individual of his own rights and ever making the people more subservient to the centralized government.

The philosophy of the great isms was almost identical. The problem of working out these philosophies differed in the separate countries only insofar as the laws and the

people themselves differed. For example, it was not quite possible for a complete dictatorship to be set up in America like that in Russia, Italy or Germany. But the same seeds were being sown everywhere, and the harvest must necessarily be the same.

Inevitably there was to be war. Each dictator in his own right prepared his country for war as it had never been prepared before. Even in America, we were told over the radio, in the newspapers, and in magazines that "not a drop of American blood would ever be shed on foreign soil." Concurrently preparations were being carried out, readying us for the greatest war we had ever seen. Our senses were constantly being lulled for this leader.

RESULTS OF THE GREAT WAR

I shall not burden you with the details of that war. But the war brought out the bigness of many men that would have never been shown otherwise. Great leaders developed in the armed forces, in the financial world, and in industry. We saw men trained; arms, ammunition, and equipment manufactured; and all maneuvered so expertly that it resembled a game of chess. Industries grew up overnight. Planes, tanks, guns and ships were produced so rapidly that our enemies were whipped on the production front before they were ever shipped overseas. But along with these great developments, certain selfish traits began to rear their ugly heads. Wartime profits made millionaires of men who were never able to make a living before. Racketeers found it profitable to deal in all sorts of subversive enterprises. It was the age of the five percenters. Influence among the right people was bought like a loaf of bread. No one in high government seemed to care. Money was plentiful. Taxes were high. Everybody was footing the bill. It mattered little that a few millions disappeared by the wrong route. These had always been the aftermath of war. But never on such a grandiose scale.

Undoubtedly the United States had become the greatest nation that had ever existed. We had the greatest army, the greatest navy, the greatest air force, and the greatest productive power ever known to man. Our enemies feared us, and our friends respected us. Truly we were God's chosen people, and we had been blessed.

We had united with many nations for a common purpose, to defeat our enemies. But the thirst for power had so permeated our leaders that they were unwilling to turn back. The philosophy they had so carefully drilled into us during the past ten or fifteen years was continued. The situation was not different in England, France, Russia or America. The ideologies were still the same.

Soon great jealousies developed between us. Where we had been friends before, hatreds came in. Now we find ourselves at each other's throats. We find no respect for us, either from our friends or from our enemies. The mighty power and influence that we developed during the war has been rashly dissipated. It has become more and more difficult to hold the people of this country in hand by the old method of divide and conquer. But they continue in their efforts. Labor unions were encouraged to fight their employers. Patients were taught to hate their doctors. Everywhere chaos became more and more apparent. Morality again reached new low ebbs. People distrusted one another, and still do. Honest political leaders everywhere seemed to lose all courage to fight for what was right, but settled down to see how much they could get.

The Korean War is just another example of not knowing what or how to do. The Chinese, who were our greatest friends five years ago, are now our most hated enemies. What a tragic situation among old friends!

The clouds never hung lower; the night was never darker; the people were never more discouraged than they have been during the past four years. Oh, we have had money and jobs, good homes, automobiles, but no one feels secure. Few have been trained to work for a living. The philosophy of "Wait and it will come to you" is still our national policy.

THE WORLD NEEDS A GREAT RELIGIOUS CRUSADE

Whether this crusade will come in our lifetime is problematical. From the top to the bottom, we have got to have a changed philosophy in our thinking. What is good, honest, and upright must be our policy, whether it is on an international, national, state, or local level. We cannot overlook little transgressions and excuse the man just because he was caught. We must have officials in whom we have confidence, whom we trust, who we

know will do what is right, whether or not it is the best policy. Honesty again must be taught in the homes, in the churches, in the schools, and in the market places. If that virtue is not accepted as a national policy, then we can never have the America that we once had. Greed, a perfectly human trait, must be treated as the serpent that it is. It must be tramped down at every level, and those that indulge in it must pay the penalty for its indulgence.

Welfare, of which we have heard so much during the past twenty years, must become a personal responsibility. Each man must care for his own. Otherwise, how can you train a child to prepare for old age, when he knows that the government will take care of him?

Hard work, almost forgotten in this generation of socialism, must be revived if we are to get along. Our children must be t r a i n e d again, that it is by their own efforts that they may expect to succeed, not that they know the right people in the right places. All in all, if we are to reverse ourselves, we have a lot of things to undo, and that job will not be easy.

THE RECENT ELECTIONS

During the campaign and the elections held last week, November 4, we heard two philosophies discussed. The first was expounded by the encumbents of the past twenty years, who talked about liberalism, a planned economy, and "You never had it so good." These same philosophies were expounded by Hitler, by Mussolini, the socialists of England, and the communists of Russia. They really built a utopia in the minds of the people who voted for them.

The other group talked conservatism and individual rights. They s t r e s s e d personal freedom and the ability of the individual to plan his own future. They stressed the fact that you must decide for yourself what your future must be: whether or not you want to live and die a bum, or whether you want to be somebody and amount to something. In their thinking, one has the right to choose for himself.

Of course, these two philosophies clash. They can no more exist together than communism and capitalism. In fact, that is just what they are. Let us not kid ourselves, trying to deny the fact that they are anything else.

The socialist party, to which the present regime actually belongs, came into disrepute with the American public before the turn of the century. They have continued to lose prestige since that time. Consequently, the American people could never have been sold down the river under the party name socialist. When the socializers planned their scheme completely to convert America, they found the Democratic party the most accessible. The solid South had never broken away from the fold. They had almost two hundred electoral votes; had been "cussed," kicked about and abused by every party in power since the Civil War. But they would always vote the party.

The big city bosses and their machines would gradually line up with any group that would increase their power. It was not difficult to get the hangers-on, the riff-raff, the reds, the pinks, and the isms of every sort to come into this great fold. What a grand coalition!

Rapidly we saw the great conservative party turned into a communist, or socialist one. The technic of divide and conquer was used to its fullest extent. The great Supreme Court, which had been the rock of Gibraltar in American politics, was actually rocked to its foundation. Purely by accident was the decision of the judges contrary to some of the wishes of the higher-ups. It was probably a personal feeling among the Supreme Court justices that kept them from ruling that the steel mill seizure was illegal. If this great catastrophe had been perpetrated on the American people, there is no question in intelligent people's minds that American freedom would have been at an end.

RESULTS OF THE ELECTION

You know the results already. Labor failed to follow its leaders. The big city machines failed to produce the majorities ordinarily expected. The farm vote was fooled no more. Minority groups were deceived no longer. We say the Negro, the Jew, the catholic, and the other minority groups breaking over and vot-

ing for the great crusader. Again we all voted as Americans and not as special groups. The South broke over party lines for the first time, even though a few of the states remained in the socialistic column.

What does all this mean? Certainly there will be a swing to the right. There will be a right-about-face in the philosophy of government. We expect an end to socialism. We can hope to start back where we left off in 1929, building a greater America.

Our own responsibility has certainly increased. We must be more alert, must assume greater responsibility for our civic, political and professional duties. Our leadership must take on an aggressiveness never seen before in medicine. We must pool our efforts in organizational work for the good of our great country. When we are right, we can elect anybody we choose.

THE BRIGHT SPOTS

With this black picture, I am sure that you wonder why my title, "Stars In The Heavens," but it is always darkest just before the dawn. Another factor that we must not overlook is the American man's inevitable will to fight back, even to death if that becomes necessary. People in general over the country are gradually getting fed up with the do-gooders who are invariably themselves no-gooders. The common man is finding out for himself that it is he who pays. The old idea of sock the rich has backfired so many times that the man on the street realizes that he is the one who is being socked.

A pure democracy is one in which the majority always rules. But experience has taught us that by mass hysteria anything may be voted. The masses will vote the house out from under you to a man down the street who never made a living in his life. Consequently, we know that we need a powerful influential minority that acts as a balance wheel against all encroachments. There must be certain checks and balances, and we have had that in our Constitution, supported finally by our Supreme Court. Small r a c i a l and minority groups must be protected from the larger, more powerful groups at all times. Group prejudices must be controlled in favor of the individual and small g r o u p rights. Our friends, the labor unions, and other groups must learn that, if they are to save themselves.

WHAT ARE OUR STARS IN THE HEAVENS?

The general practitioner, which you represent, is closest to the heart of America of any group unless it is the ministers. Occasionally we are even closer than they are. The medical profession has been sold down the river by the socializers, but this has been directed more against the specialist than against the family doctor. The socializers have had little luck in convincing the American people that their personal physician is a reprobate, a money-grabber, or a dud. During these years in their attempts to belittle the medical profession, their arrows have been directed at others than the general practitioner. Of course, we are part of that great profession, but it is within our power to restore the faith that the American people once had in their doctors. We are so close to the patients we treat that many times we are able to straighten them out in their way of thinking.

The integrity, the honesty, and the morality of the family doctor is still largely unquestioned. It is up to us to impress upon the public that we represent a large and probably the most important segment of the medical profession as a whole. The specialist, as important as he is, and we c a n n o t do without him, should be our assistant in the care of the sick and afflicted. If we stick to our ideals and continue in our present trends, we may help save America.

In closing, I cannot help mentioning some of the great general practitioners of the South. While these do not represent even a small segment of that great mass of doctors, I personally want to pay tribute to a few of them by mentioning their names during this discourse: John R. Bender, Winston Salem, N. C.; Walter W. Sackett, Miami, Fla.; Dave G. Miller, Morgantown, Ky.; John O. Boyd, Roanoke, Va.; Fount Richardson, Fayetteville, Ark.; S. S. Kety, Picayune, Miss.; Albert S. Dix, Mobile, Ala.; D. H. James, Memphis, Tenn.; M. C. Wiginton, Hammond, La.; Fred H. Simonton, Chickamauga, Ga.; R. L. Crawford, Lancaster, S. C.; H. T. Jackson, Ft. Worth, Tex.; Malcolm E. Phelps, El Reno, Okla.; and R. C. McIlwain, St. Louis, Mo.

RECURRENT PTERYGIUM*

By ALFRED A. NISBET, M.D.
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Pterygiums are common in the southwest, and a rather large number of them tend to recur. After many of each kind have been observed and treated it is possible to predict with a fair degree of accuracy which ones will soon appear again following treatment. If one is relatively thin, quite narrow and contains few blood vessels it will respond to almost any of the usual surgical procedures, even if it has been operated upon previously. The three procedures which leave tissue in place after operation may succeed, but in all of them care must be taken to prevent later encroachment on the limbus. This was pointed out by Doherty.[1]

First, if a transplant is used, the side of the pterygium body must not overlap the limbus or the direction of growth will return to horizontal. Secondly, if a transplant of mucous membrane,[2] bulbar conjunctiva[3] or skin[4] is used, a bare area must remain at the limbus. Tissue from the mouth or skin surface remains thick and unsightly. Third, the procedure advocated by Spaeth[5] in which the pterygium body is cut free at the borders and rotated ninety degrees may in the end appear similar to a recurrent transplant.

Excision procedures are of two types although they vary little except for the amount of tissue removed. The one preferred by McGavic[6] leaves a fringe of pterygium at the edge of the bare sclera. If the pterygium is thick, an unsightly rim results. Sugar[7] following D'Ombrain's[8] lead depends on resection of subconjunctival tissue and a small bare area of sclera. After several recurrences the separation of bulbar conjunctiva from underlying tissue is not easy.

The second type which removes the entire body of the pterygium with thin conjunctiva pulled in from above and below covers that portion of the defect remote from the limbus. Care is taken to leave an adequate triangular area of bare sclera. This gives a better cosmetic result but is not practical if the pterygium body is extremely wide.

The Strontium$_{90}$ (Sr_{90}) applicator has been of great help in conjunction with surgery in treating recurrent pterygiums. Rarely should it be used alone because old blood vessels respond slowly and when the head is well on clear cornea the end result is a white patch. If the head is on the limbus, some retraction may result with shrinking of the mass.

When this applicator first became available, the suggested dosage resulting from the early work was very misleading because of its inadequacy.[9,10] Some of the more persistent pterygiums seemed to have their vessels stimulated rather than discouraged by this beta radiation.

There are several points of interest regarding the use of beta radiation in general and the Sr_{90} applicator in particular. In spite of the few objections that have been raised, particularly by rival applicator makers, regarding penetration, the Sr_{90} applicator remains the most satisfactory for my use. It produces no significant gamma radiation and an adequate dosage may be given in a relatively short period of time.

The Sr_{90} applicator is calibrated by the ionization chamber method and dosages are calculated in roentgen equivalents physical (rep.).[10] This is not to be confused with the unit roentgen of x-radiation.

The Sr_{90} applicator which I have produces about 50 rep. per second; so a dose of 1500 may be given to each contact area in thirty seconds. Two methods of application may be used. If fixed contact areas are preferred the applicator is moved to a contiguous area after each dose. If the spray procedure is used, a relatively larger dose that approximates the total of the contacts, is given with the applicator barely touching and moved slowly over the surface to be barraged. The dose for each contact area varies from 1500 to 3000 rep. No adverse reaction has been noted following the larger amount. Individual doses are applied each week or every other week. The total dose per contact area varies from 5000 to 20,000 rep.

The time of application is of importance for this radiation affects new blood vessels to a greater degree than it does old ones. In a few instances a preoperative dose was applied in the hope that the ionization

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would be in progress at the time of operation. A dose is always given at the end of operation. It should be adequate both in amount and area treated. In one instance a few days after operation a cluster of new vessels appeared in the cornea coming to the surface at the former site of the pterygium head. They regressed gradually during treatment and have not been noted since.

Contact doses may be made with impunity along the limbus postoperatively. There seems to be no interference with the formation of new epithelium in the bare areas on the cornea and sclera. This is probably due to the delayed action of the radiation. Somewhat larger doses may be necessary near the plica where the tissue is thicker and contains larger and well established blood vessels.

There have been no noticeable unfavorable reactions to this radiation. Usually there is some irritation of the eye an hour or two after a treatment because there is some tendency for drying of the cornea in addition to the mechanical irritation caused by touching the surface with the applicator during treatment. One patient was sensitive to tetracaine and at first the reaction was thought to be an early radiation reaction. In no case has there been a delayed reaction which could be attributed to the treatment. The longest observation period, however, was one year.

SUMMARY

Recurrent pterygium in the southwest is a perplexing problem. We find that a pterygium often recurs regardless of the type of surgical procedure used. Some persons have a propensity for recovering the denuded corneal area quickly with a vascular membrane similar in appearance to the one removed. This paper proposes to describe a method whereby surgery with prompt and appropriate application of beta radiation gives gratifying results.

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IRON METABOLISM IN ANEMIAS IN PREGNANCY*

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Since Channing[1] in 1842 reported the prevalence of anemia in pregnant women a multiplicity of authors have attacked the subject. Variations in methods of study, in nomenclature and in accuracy of reporting make many, particularly the earlier, studies of little value for any statistical purposes, but the constant stream of observations of the many serious cases of various types of anemia in pregnancy serves to emphasize the importance of this complication.

In studying the problem of anemias in pregnancy much confusion has been wrought by the variety of names used, many of which mean essentially the same thing. We have adopted Holly's[2] classification, to simplify the problem of nomenclature.

(A) Anemias directly related to pregnancy
  (1) Iron deficiency anemia in pregnancy
  (2) Megaloblastic anemia in pregnancy
  (3) Hypoplastic anemia in pregnancy

(B) Anemias not directly related to pregnancy
  (1) Sickle cell anemia
  (2) Hemolytic anemia
  (3) Cooley's anemia
  (4) Anemia of infection, and so on.

Under group B are the anemias merely coincidentally associated with pregnancy. Albeit they may present a serious complication and may in turn be markedly aggravated by the pregnancy, they are not an intrinsic factor in the pregnancy *per se*. On the other hand, those under group A are an intrinsic problem in pregnancy and are produced by

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the presence of the pregnancy in the woman. Of these anemias the large majority are of the iron deficiency type. Hence, a careful consideration of the factors influencing iron metabolism and erythropoiesis in the pregnant female are essential to a sound approach to therapy.

Due to the periodic menstrual blood loss in woman during her reproductive life, the female enters pregnancy usually in a rather precarious state of iron balance, and may spend her entire life prior to the menopause in a state of greater or lesser iron deficiency. Many a female child, born to an iron deficient mother, is iron deficient at birth, and being raised on a mediocre diet achieves maturity and enters upon her own reproductive activity without ever reaching an adequate iron balance.

The normal woman has on the average a total iron value of about 4.0 grams; about 700 mg. being in iron storage in the liver, spleen and bone marrow, about 3000 mg. being fixed in hemoglobin, and the residue being carried as transport iron in the iron-beta globulin complex in the blood serum. There are, also, infinitesimal amounts of iron fixed in the entire cellular structure as a part of normal cellular metabolism.

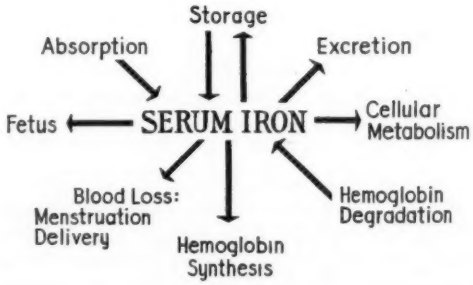
As pregnancy progresses to term and through delivery, a woman is subjected to a variety of iron losses. To compensate for her increased blood volume she must utilize 400 mg. of iron in additional hemoglobin synthesis. It is true that this iron is recaptured in the puerperium, but it is removed from availability during the pregnancy and represents an iron loss at this time in that it is temporarily unavailable. At this point her iron storage, if at the maximum when pregnancy began, is reduced to about 300 mg., 3400 mg. being fixed in hemoglobin. She loses less than 1 mg. of iron per day by excretion in urine, feces, and perspiration, so normally this can be ignored as being equalized by dietary absorption.

Lund[3] showed that the daily diet of the female contains about 7 to 12 mg. of available iron. However, Moore[4] shows that only 5-15 per cent of dietary iron can be absorbed, thus making from 0.5 to 1 mg. of iron the amount that can be absorbed daily from the diet. Hence, there is only from 150 to 250 mg. of iron that can be expected to be absorbed from the normal diet in the course of an entire pregnancy. Because of the loss of 400 mg. in additional hemoglobin synthesis, we have a deficit of 150 to 250 mg. of iron from this source.

The loss of iron to cellular metabolism is extremely small and need not be considered as an important factor. Holly[6] shows that in the last trimester of pregnancy, however, there is a tremendous drain on the maternal available iron, as approximately 500 mg. of iron must be transferred across the placenta to the fetus for the hemoglobin synthesis of the infant. If the mother had a normal iron storage of 700 mg., which was reduced to 300 mg. by her own additional hemoglobin synthesis, this transfer, obviously, leaves her with an iron deficit of at least 200 mg. Then at the time of delivery she will lose at least 100 mg. more of iron that is left in the placenta. If her blood loss is only an average one of from 150 to 250 cc. she will again lose another 100 mg. of her available iron. If the woman nurses her child she will have an additional loss of 1 mg. of iron per day of nursing.

It is, therefore, obvious that any pregnancy is going to produce an iron deficit in any woman and unless energetic therapeutic steps are taken the woman must have an iron deficiency anemia unless she has an abnormally high iron storage at the time of conception. *Graph 1* taken from Holly[5] illustrates the iron interchange in the body.

As previously stated the storage iron in the body is found essentially in the liver, spleen and bone marrow, where most of it is stored as ferritin although some may be deposited as hemosiderin. This iron is freely interchangeable between the storage site and the serum iron and is carried in the serum to the



GRAPH 1

points of erythropoiesis. Whenever there is an iron deficiency the first observable hematological evidence is a drop in serum iron values of the patient and a concomitant rise in the iron binding capacity of the serum. The serum iron drops in the normal pregnant woman as shown by Wintrobe[7] and Holly.[6] According to the former, it is about 60 gamma per cent at the end of normal pregnancy. However, Holly[6] found many serum iron levels down to 20 in women with even moderate iron deficiency anemias as recorded by hemoglobin values.

The serum iron represents the iron in transport in the body and is carried bound, in its ferric form, to a beta globulin. Tompsett[8] proves that ferric iron alone forms the biological complexes, where two atoms of iron are bound to one molecule of serum beta globulin. Surgenor[9] has demonstrated that the iron binding beta globulin has a molecular weight of 90,000 and comprises about 3 per cent of the plasma protein; also that one mg. of the crystallized iron binding beta globulin can bind 1.25 gamma of iron. Flexner[10] shows that the capillaries are relatively permeable to the iron binding globulin and that the iron-globulin complex can leave the blood stream as such, but Holly[11] shows that most of the transported iron leaves the blood stream simply as diffusible ionized iron. It was formerly thought that the iron-globulin complex broke down in the placenta as well as that the blood cells broke down there and that the iron then crossed the placenta being taken by the fetal circulation in diffused ionized form, but Vosburgh[12] using tracer technic has shown that the iron-globulin complex crossed the placenta as such in the transport of iron from mother to fetus. Tracer materials were found in the fetus within 40 minutes of the time of their administration to the mother prior to delivery. The transport iron that is attached to the beta globulin is derived from three basic sources: first, from sites of iron absorption, second, from hemoglobin destruction, and third, from iron storage.

The latter two sources are good, economical re-utilization methods of usage of previously acquired and repeatedly used iron. However, since there is an iron deficit in pregnancy, the methods of acquisition of additional new iron are of prime importance. Moore[13] in his studies concluded that the acid secretions of the stomach were of value only in reducing ferric forms of iron to the ferrous form thus promoting absorption, and he further postulated that if ferrous iron is administered it is useless to give additional acid therapeutically. This is at variance with the findings in our studies. Lund[14] has shown aid in iron absorption by the presence of vitamin C and has found evidence of seasonal variations relating to lower amounts of dietary vitamin C in the spring of the year.

The mode of absorption of iron from the intestinal tract is rather complicated and the daily absorption rate is strictly limited to a maximum of 5 mg. per day even on full dosages of supplementary iron. According to Granick[15] iron moves from the intestinal lumen into the mucosal cell as a one-way mechanism. The iron enters the cell in its ferrous form where it is oxidized to its ferric form and then combines with apoferritin to form ferritin. The saturation of the cell produces "mucosal block" to further absorption until the ferritin in the cell has moved out into the blood stream with the iron again reduced to its ferrous form. In the blood stream the iron is again oxidized to its ferric form where it combines with the iron binding beta globulin for transport to usage for hemoglobin synthesis or for storage.

It is generally conceded that the pregnant woman has an increased ability to absorb dietary and supplementary orally administered iron. However, in some patients there is a disturbance in the absorptive mechanism even though the patient is on an adequate vitamin C bearing diet and even though the iron be of the ferrous type. These are the patients who develop iron deficiency anemia in pregnancy even though their diets and supplementary oral iron administration are adequate. In addition to performing serum iron and serum iron binding capacity studies to diagnose these anemias accurately as being iron deficiency in type, there are two other reasonably easy methods of confirming the diagnosis. These are erythrocyte protoporphyrin studies and bone marrow studies.

Watson[16] showed that there is an increase of erythrocyte protoporphyrin in all forms of iron deficiency anemias. The only one of the three factors that cause increased erythrocyte protoporphyrin values, that occurs in normal pregnancy, is iron deficiency. It then follows

that high E.P. values are diagnostic of iron deficiency anemia in pregnancy.

The bone marrow changes in normal pregnancy were reported by serial sternal punctures by Wolff and Limarzi,[17] who followed 30 women with serial studies throughout pregnancy and the puerperium, as well as by isolated bone marrow biopsies on 75 other women. They found that whereas the bone marrow of normal individuals had a myeloid-erythroid volume of 6.8 per cent, the pregnant woman had a myeloid-erythroid value of 14 per cent with immature forms in the last trimester. They observed an increased myelopoiesis with increased marrow platelets and megakaryocytes and state that the pregnancy effect lasts for 3 months portpartum. Holly[18] found that there is normally a generalized bone marrow hyperplasia which appears at the fourth or fifth month of gestation and which persists for six to eight weeks postpartum. He found normal differential counts at all stages of gestation and observed an increase in megakaryocytes which continued for six to eight weeks portpartum. His normal pregnancy myeloid-erythroid volume averaged 10 per cent.

In the presence of iron deficiency anemia he found the myeloid-erythroid volume rising to an average of 19.6 per cent with very significant increases in the normoblast count. After successful iron therapy the myeloid-erythroid volume returned to normal as did the normoblast count.

Thus iron deficiency anemia in pregnancy is characterized by reduced hemoglobin values, reduced serum iron values, increased serum iron binding capacity, increased erythrocyte protoporphyrin values, increased normoblast counts in the bone marrow and increased myeloid-erythroid volume in the bone marrow. This condition responds to orally administered iron and, in the event of failure of the absorption mechanism, responds to intravenously administered iron.

Lund[19] observed that 95 per cent of patients with iron deficiency anemias respond to oral iron therapy. Dieckmann[20] and the authors[21] in a previous study found a majority of satisfactory responses also. Scott,[22] however, found unsatisfactory responses in 20 per cent of his patients and reports that 4.5 per cent were resistant to oral iron therapy.

All studies of iron deficiency anemia in pregnancy show the presence of a group who are typically iron deficiency anemias and who do not respond to oral therapy even though their diets are adequate, their iron administration is adequate and though they are given additional vitamin C and hydrochloric acid. These are the patients of inadequate iron absorption, the so-called "mucosal block" group of patients. These patients have been treated by intravenously administered iron monoxide in sucrose as a 2 per cent colloidal suspension. The reports of Holly,[23 24] Kartchner and Holstrom[25] and Briscoe[26] all show that this is a successful method of by-passing the problem of "mucosal block," as well as a rapid method of increasing hemoglobin synthesis where the iron deficiency anemia is severe and time is too short for the slower method of oral administration. It is also valuable in those occasional patients who cannot tolerate orally administered iron. They all report a significant occurrence of reactions, but slow administration of the solution and careful observation prevented any serious effects.

Megaloblastic anemia in pregnancy is a reasonably rare occurrence and like the other intrinsic anemias in pregnancy is not to be accurately diagnosed on studies of the morphology of the peripheral cells as the peripheral cell changes occur late and are subject to great error in evaluation. The diagnosis can be made accurately only by bone marrow studies. The serum iron values are high, the iron binding capacity is low and the erythrocyte protoporphyrin is normal in these patients as shown by Holly.[27] The marrow biopsies show decreased normoblasts and neutrophils with large numbers of megaloblasts which are present in sufficient quantity to give myeloid-erythroid values of 35 or higher. Both Holly[27] and Moore[28] state unequivocally that megaloblastic anemia in pregnancy is characterized by its uniformly successful treatment with folic acid with the abnormal hematological findings reverting to normal under this therapy. It is interesting to note that Holly[29] also induced remissions in megaloblastic anemia by administration of ascorbic acid in vitamin B_{12}.

Fortunately hypoplastic anemia in pregnancy also occurs quite uncommonly, as these patients have no response to any form of therapy, oral iron, intravenous iron, folic acid,

ascorbic acid, vitamin B_{12}, hydrochloric acid or liver extract. The only therapeutic measure that is of aid to these women is repeated blood transfusion in the more acute cases. The serum iron, the iron binding capacity and the erythrocyte protoporphyrin are normal according to Holly,[18] and the myeloid-erythroid per cent is normal or low on bone marrow biopsy. The studies of bone marrow biopsy in these women show a hypoplastic bone marrow with small mature cells with a reduction in the number of normoblasts. After the pregnancy is terminated the bone marrow resumes function and these patients return to normal.

While Lund[19] and Wilson[30] find a number of cases where adequate erythropoiesis is masked by excessive plasma volume increases, in the large majority of cases the hemodilution factor is small and is associated with hypoferremia and increased erythrocyte protoporphyrin. Most of these cases will respond to adequate oral or in the severe cases to intravenous iron therapy.

The margin of error in hemoglobin determinations by visual technics such as Haden-Hauser was found to be quite significant, so all data was compiled from determinations made using the Evelyn photo-electric method. Red cell morphology changes were found to be significant only in a small percentage of cases, to occur late and to be subject to individual interpretations. The hemoglobin values were found by Holly to vary with the significant variations in serum iron, iron binding capacity and erythrocyte protoporphyrin. Therefore, in this series of cases the status of the patient as relates to her normalcy or anemia is expressed in hemoglobin percentage values, converting on the scale where 15.5 grams per cent hemoglobin equals 100 per cent and 12 grams per cent hemoglobin equals 77 per cent.

In determining whether therapy was successful or a failure in this series an arbitrary level of 77 per cent (12 grams per cent) hemoglobin was chosen as our standard.

If the patient's hemoglobin was maintained above this level, or in the event that anemia occurred, if the level was brought to or above this point and there maintained until delivery, the patient was recorded as one who received successful therapy. If the hemoglobin was not raised to 77 per cent and maintained there the case was considered a failure. By this criterion and averaging the entire series together this group of women was successfully treated *(Tables 2* and *3)*. In breaking down the entire group, however, we encountered some interesting facts *(Table 4)*.

We were amazed to find that in the total series only 74 per cent responded satisfactorily to oral iron therapy, and that all forms of therapy yielded only 89 per cent of successfully treated cases. It is not surprising that there is a higher percentage of multipara who

(A) Anemias directly related to pregnancy
  (1) Iron deficiency anemia in pregnancy
  (2) Megaloblastic anemia in pregnancy
  (3) Hypoplastic anemia in pregnancy

(B) Anemias not directly related to pregnancy
  (1) Sickle cell anemia
  (2) Hemolytic anemia
  (3) Cooley's anemia
  (4) Anemia of infection, etc.

TABLE 1

		Age	
	Number	Average	Range
Primigravida	443	23.6	15-41
Multigravida	697	27.3	17-42
	1140		

TABLE 2

GROSS MONTHLY HEMOGLOBIN AVERAGE
15.5 Grams Per Cent Equals 100 Per Cent (Evelyn Technic)

	3		4		5		6		7		8		9		P.P.	
	Av.	Range	Av.	Range	Av.	Range	Av.	Range	Av.	Range	Av.	Range	Av.	Range	Av.	Range
Primigravida	79.1	58 103	79.2	61 99	76.1	51 96	76	44 95	77.9	60 95	79.6	62 97	81.8	63 100	87	70 101
Multigravida	79.7	68 99	77.3	49 98	76.4	54 94	76.2	48 95	76.9	55 94	78.3	57 95	80.3	57 103	87.2	70 102
Total No. hbg. determinations	792		653		704		718		763		742		687		596	

TABLE 3

are failures with oral iron therapy than of primipara, because these women have been subjected previously to depletions of their iron storage reserves. Though they may start pregnancy with an average hemoglobin *(Table 3)* equal to that of the primipara, it must be remembered that hemoglobin levels do not express the extent of iron storage.

These patients were all given orally 1170 mg. of ferrous sulfate with molybdenum oxide daily. In view of the theory propounded by Moore that hydrochloric acid is useful only in reducing ferric iron to ferrous iron, one would expect no therapeutic effect from hydrochloric acid orally administered to the patients with anemia in pregnancy on the above iron regimen. One hundred forty-nine patients who had failed to respond to orally administered iron were given the equivalent of 10 minims of U.S.P. dilute hydrochloric acid three times a day along with their iron ration. Of these 149 patients, successful results were obtained in 112 cases or 75 per cent. The results were identical in both the primigravida and multigravida. Whether the presence of the hydrochloric acid affects the absorption factors from the intestinal lumen, whether it aids in absorption of dietary vitamin C, or whether there is another unknown factor in its usage we are unprepared to say. However, when over 10 per cent of the total series respond in the presence of empirical hydrochloric acid administration, when they have previously failed to respond to oral iron alone, the figure becomes definitely significant. The subject of the action of hydrochloric acid in these cases deserves further study and possibly may lead to re-evaluation of present attitudes toward its use.

There were 67 pregnant patients who received intravenous iron therapy, along with 3 gynecological cases. Detailed studies of the therapy in 64 of the cases are presented in *Table 5*. Three of the pregnant patients are dropped from the statistics because they moved away so their subsequent course was not observed by the same technic. They and the three gynecological patients, who were all serious iron deficiency anemias resulting from menometrorrhagia due to fibroids, are included in our figures regarding reactions to intravenous iron administration.

The dosage of intravenous iron was calculated to be about 900 mg., on the basis that this would supply the iron deficit of 500 mg. to the fetus and give the mother 400 mg. to replenish her depleted iron reserves. No effects of hemochromatosis were observed. The iron given was proferrin®* which is iron monoxide in sucrose containing 20 mg. per cc. in colloidal suspension. The first dose given was 100 mg., followed by four doses of 200 mg. given at three-day intervals. It was administered into the antecubital vein with a number 24 needle and given slowly at a rate of less than 1 cc. per minute. Ten different kinds of reactions were observed to result from the injections *(Table 6)*, in 29 of the 70 pa-

*Sharp and Dohme, Inc., Philadelphia, Pa.

TREATMENT RESULTS

		Number Treated	Successful		Failure	
			Number Treated	Per Cent	Number Treated	Per Cent
Primigravida	Oral iron	417	325	78	92	22
	Oral iron with HCl	57	43	75	14	25
	Intravenous iron	16	10	62	6[b]	38
Multigravida	Oral iron	678	488	72	190	28
	Oral iron with HCl	92	69	75	23	25
	Intravenous iron	48	34	71	14[c]	29
Total Series	Oral iron	1095	813	74	282	26
	Oral iron with HCl	149	112	75	37	25
	Intravenous iron	64	44	69	20	31
Total Results	3 Methods	1095	977[a]	89	118	11

Oral Iron—1170 mg. daily molybdenum ferrous sulfate.
HCl—3 capsules daily glutamic acid hydrochloride, each capsule equals 10 minims U.S.P. dilute HCl.
(a) Includes eight additional successful cases in b & c.
(b) Three refractory cases responded successfully to subsequent folic acid; hence magaloblastic anemia.
(c) Five refractory cases responded successfully to subsequent folic acid; hence magaloblastic anemia.

TABLE 4

PATIENTS RECEIVING INTRAVENOUS IRON

	Name	Am't	Reac.	Del. Date	Age	Para	Per Cent Hb of 3	4	5	6	7	8	9	P.P.
1.	M.A.R.	900	No	1-18-51	30	1	76	I 74	A 64	70		P 65	75	80
2.	R.G.B.	900	Yes	11-16-51	20	0	78	I	69	A 69	P 69	FA 69	78	85
3.	H.F.A.	880	No	11-24-51	25	1	81	80	82			P 64	73	92
4.	W.R.D.	900	Yes	12-22-51	31	0	77	I	76	75	P 70	76	FA 71	89
5.	E.C.R.	70	Yes	1-12-52	23	0	74	I	81	A 62	P 64	FA 65	78	82
6.	V.R.T.	180	Yes	4- 2-51	20	1		I 65	A	70	P 65	70	74	78
7.	H.E.M.	900	No	2-26-52	26	0	81	I 75	70	A	69	P 65	85	85
8.	P.A.H.	220	Yes	2-27-52	22	1			I 70	74	A	P 68	70	82
9.	M.J.B.	900	No	8-17-52	23	1	I 67	A 65	P 67	75	FA 75	72	74	82
10.	F.G.J.	900	No	7- 4-52	27	2	I 78	A 73	74	73	P 68	77	74	86
11.	O.C.A.	660	Yes	5-14-52	30	1	I 74	76	80		71	P 69	77	87
12.	H.W.H.	900	No	6- 8-52	22	0	92		82	83	I 72	P 67	81	96
13.	G.C.K.	900	No	9- 4-52	31	1		85	I 74	P 65	71	76	84	93
14.	A.T.W.	900	No	9-26-52	27	1	I 72	77		P 62	74	79	87	95
15.	F.D.S.	900	No	8-25-52	33	0	I 72		A 72	74	P 69	78	83	89
16.	G.T.H.	900	No	10-29-52	21	2		72	I 65	P 67	68	72	77	
17.	L.A.M.	900 undel.	No	1- 3-53	28	2	I 65	P 63	FA 64	69	74			
18.	E.W.C.	900 undel.	No	12-11-52	19	0	I 76	74	70	P 65	72	80		
19.	G.J.J.	900	No	5-24-51	23	1	I 62	57	P 67	69	72	68		75
20.	M.J.K.	600	Yes	6-16-52	24	3	80	80		P 73	75	78	77	90
21.	P.J.M.	900	No	2-19-51	35	4	I 71	70		P 62	68	77		90
22.	V.R.B.	900 Cooley's	Yes	3-12-51	26	3	69	I A 57	55	P 60	62	65	66	75
23.	D.J.W.	900	No	4-30-51	23	1		63	P	71		69	73	89
24.	J.E.M.	600	Yes	7-13-51	34	1	I 70	A 62		63	70	P 68	69	81
25.	A.V.M.	900	Yes	5-29-51	26	1	I 64		70	P 73	77	79	84	78
26.	H.B.F.	900	No	4-16-51	36	4	I 65	FA 57	54	P	67		78	80
27.	V.T.M.	680	Yes	7- 3-51	27	3	79	72	P 68	72	72		78	78
28.	J.F.Z.	880	Yes	5- 9-51	30	1				I 66	P 55	60	75	78
29.	R.D.K.	920	Yes	6-12-51	29	2	78			I 76	69	P 69	77	85
30.	F.V.O.	900	No	8-31-51	26	2	63	69	P 57	66	72	75	78	90
31.	J.H.	900	Yes	8-11-51	25	1	88		I 78	P 69	78	84		82
32.	D.J.W.	900	No	7- 9-51	29	0	80	I 74		P 70	87	87	85	81
33.	R.D.G.	900	No	7-20-51	28	2	78	I 72		P 69	77	82	80	91
34.	R.W.H.	900	No	12- 2-51	36	2	P 60	77	82		86		88	85
35.	J.R.M.	900	Sl.	8-24-51	31	2	82	I 76		69	P	73	82	89
36.	E.J.D.	900	Sl.	8-14-51	28	1		I 72	72	P 66	FA 66	70	76	87
37.	T.E.S.	900	Sl.	8-29-51	22	0			51	P 44	60	71	76	89
38.	J.E.M.	900	Sl.	11-24-51	23	1	I 69	P 68		76	77	76		88

TABLE 5 (Continued on next page)

tients given the iron. In 13 cases (18.5 per cent) the reactions were of sufficient severity to warrant interruption of therapy, although I feel that 4 of these were psychosomatic rather than due to the drug. The three cases of venous thrombosis were mild and the patients were given no therapy for the condition. The frequently occurring sore arm was transitory and was considered to be only vasospasm in the artery in response to the venous irritation.

The treatment results were interesting in that the true iron deficiency anemias due to failure of intestinal absorption responded dramatically. This was to be expected as, barring bone marrow disturbance, the prob-

PATIENTS RECEIVING INTRAVENOUS IRON (Continued)

	Name	Am't	Reac.	Del. Date	Age	Per Cent Hb of Para	3	4	5	6	7	8	9	P.P.
39.	H.F.H.	900	Sl.	9- 4-51	31	1	77	78		I 71	P 68	75	76	83
40.	M.L.K.	900	Sl.	12- 5-51	25	3			P 64		82		80	78
41.	F.F.T.	900	No	11-15-51	26	1		I 78	A 71	P 69	FA 70	76	84	92
42.	D.M.L.	860	Sl.	10-26-51	23	1	88	I 77	78		69	P 68	80	96
43.	J.C.B.	640	Yes	11-22-51	30	1	I 70	73	70	A 66	P		74	81
44.	O.S.S.	300	Yes	12-23-51	23	1	78		74	P 75		80	78	79
45.	V.E.C.	900	No	12-19-51	21	0	I 70	72		P 67	67	FA 71	76	88
46.	J.F.S.	960	No	11-18-51	20	0					P 61	71	77	81
47.	W.N.M.	900	No	1- 1-52	24	0	80	I 78	A 74	P 69		78	84	92
48.	R.G.A.	900	No	3-17-52	23	1	I 80	P 70	78	76		FA 73	77	81
49.	W.F.C.	880	No	3-30-52	25	0	I 80	A 72	P 63	FA 66	67	74	72	88
50.	H.C.V.	900	No	1-29-52	29	1	82		I 81	A 73	P 70	FA 73	87	96
51.	R.W.L.	920	No	3- 5-52	22	0	85	I 74	A 66	P 67	FA 68	66	67	81
52.	R.D.G.	400	Yes	2-22-52	30	2		I 74		70	P 65	77	85	88
53.	W.M.M.	360	Yes	4-19-52	23	1	I 76		80		P 65	FA 64	61	78
54.	J.B.S.	900	No	3- 5-52	19	1			I 69		71	P 67	73	88
55.	E.L.M.	900	No	6- 1-52	30	2	82	I 82		A 73	P 70	75	78	89
56.	E.M.S.	900 Ca. of Br.	Yes	7- 6-52	35	2	I 69	A 73	69	P 68	FA 67	69	68	87
57.	J.R.B.	900	No	5- 3-52	26	1	I 76	79	78		P 71	76	82	90
58.	T.J.W.	900	No	7-28-52	28	2	87		I 78	80	80	P 70	84	96
59.	A.L.W.	900	No	10-14-52	26	1		82	I 76	P 69	76	75	82	80
60.	K.W.L.	900	No	10-12-52	33	2	85		I 69	P 65	FA 69	72	78	78
61.	V.E.D.	480	Yes	10-11-52	36	2	75	I	74	P 68	75	82	84	86
62.	N.A.W.	900	No	11- 7-52	25	0	I 81	82		A 74	P 70	78	82	
63.	M.J.K.	860	No	5- 6-51	23	2	76		P 73		72	76	79	92
64.	G.R.B.	900 Undel.	No	11- 7-52	20	0	79	I	A 67	72	69	P	82	

Three additional obstetrical patients were given intravenous iron therapy who moved out of town so no complete data are available. There were three cases of iron deficiency anemia from menometrorrhagia treated with this group with no reactions and good results.

(I) When oral iron was started
(A) When HCl was started
(P) When intravenous iron was started
(FA) When folic acid was started

TABLE 5

lem of erythropoiesis in pregnancy is largely, excepting the few cases of excess plasma volume, one of delivering an adequate supply of available iron for hemoglobin synthesis.

Case 34 was an example of this group. In the patient's first two pregnancies, all forms of therapy failed utterly and she was given three transfusions in the first pregnancy and two transfusions in the second. Between the second pregnancy and this pregnancy she was transfused once by her home town physician for anemia resulting from repeated menorrhagia which did not respond to iron orally, vitamin B_{12}, folic acid and liver extract. She was given 900 mg. of intravenous iron starting in her eleventh week of pregnancy with a subsequent satisfactory result. In her eighteenth week of pregnancy a left oophorectomy was performed for an ovarian cyst 8 cm. in diameter without disturbing her hemoglobin status. It was interesting to observe her increased feeling of well being as was the case with most of the other successfully treated patients.

Case 22 is included as a failure, but one was expected. This patient had Cooley's anemia which was observed in her three previous pregnancies, and after receiving the iron she noted no difference in the way she felt. Her eldest child, a daughter, also has Cooley's anemia.

Case 56 is interesting in that she had a refractory anemia which did not respond to intravenous iron therapy or subsequent folic acid therapy. She therefore, is not a megaloblastic anemia, for if this were the case, in the presence of adequate iron supply, folic acid would give a dramatic hemopoietic response. She developed carcinoma of the right breast in a nodule less than a centimeter in size at 10 o'clock about half way between the areola and periphery of the breast, which was observed in her thirty-sixth week of gestation. A radical mastectomy was performed in her thirty-seventh week of gestation and a metastatic nodule was found in the axilla. She was given deep x-ray therapy and has subsequently had castrating x-ray and androgen therapy. Her immediate postpartum hemopoietic response would indicate that she had a hypoplastic anemia in pregnancy.

The satisfactory hemoglobin response in seven of the patients who received incomplete therapeutic dosage due to reactions would indicate that our dosage may be unnecessarily large in some cases.

Cases 2, 5, 17, 36, 41, 45, 48 and *60* all failed to respond by hemoglobin production when given adequate or smaller amounts of

PATIENTS WITH REACTIONS TO INTRAVENOUS IRON

Patient's No.	Sore Arm	Dizzy	Severe Flushing	Nausea	Respiratory Distress	Venous Thrombosis	Faintness	Back Pain	Abdominal Cramps	Shoulder Pain	Severity of Reaction
2	x	x									mild
4						x					mild, 4th
5			x		severe						stopped
6	severe										stopped
8		severe					x				stopped
11	x				severe						stopped
20		x	x	severe							stopped
22								each injec.			mild
24								severe			stopped
25		x	x								mild
27					severe	x		x			stopped
28	x										very mild
29			x		x						mild (1)
31	x							x			mild (1)
35		x	x								mild (2)
36										x	mild (2)
37	x										mild
38	x									x	mild
39	x										mild
40	x	x									mild
42	x										mild
43			severe	x							stopped
44					severe						stopped
51						x					mild
52					severe			severe			stopped
53			x	x	x				severe		stopped
56	x										mild
61	x				severe						stopped
*					severe						stopped
Total	12	6	7	3	9	3	1	5	1	2	13 stopped

* One of the patients who moved away had severe reaction. Others no reaction.

TABLE 6

intravenous iron. Subsequently they were given folic acid orally and all showed prompt hemoglobin synthesis. By the criteria of Moore and Holly these are, therefore, eight cases of megaloblastic anemia, since no other condition intrinsic in pregnancy will respond to folic acid therapy.

This leaves twelve patients of the intravenously treated group who did not respond to iron therapy or to the subsequent administration of folic acid during the pregnancy. As soon as the pregnancy terminated each of these patients showed an immediate satisfactory hemoglobin response which is typical of hypoplastic anemia in pregnancy.

In summation of our results *(Table 7)*, 74 per cent of our cases were successfully treated on oral iron, 10 per cent were successful on oral iron plus hydrochloric acid, 4 per cent were successfully treated with intravenously administered iron and 0.7 per cent were cases of megaloblastic type which responded to folic acid therapy. We were unsuccessful in the treatment of 11 per cent of our cases.

CONCLUSIONS

In considering our unsuccessful results other than those in hypoplastic anemia or Cooley's anemia, one is struck by the fact that therapy should have been started in most of them earlier in the pregnancy. If the problem is one of supplying additional iron for hemoglobin synthesis and the patient is going to have an iron deficit of 700 mg. (500 mg. to the baby, 100 mg. in the placenta and 100 mg. in blood loss) then it should obviously be supplied in advance of the deficit. Since supplementary oral iron can be absorbed at a maximum rate of only 5 mg. per day, and since the deficit at the end of pregnancy is about 700 mg., it is obvious that oral iron therapy should be instituted at least 150 days before the anticipated date of delivery. Likewise, particularly in the lactating woman, iron therapy should be continued into the puerperium.

In the event of failure to achieve or maintain satisfactory hemoglobin levels on oral iron therapy alone, 10 per cent of women will have a satisfactory hemopoietic response if hydrochloric acid therapy is added to the oral iron.

About 6 per cent of patients will demonstrate a failure to absorb iron when it is orally administered with or without hydrochloric acid. These patients can be given intravenous iron therapy with relative safety, if it is given slowly with a small needle, as only 18.5 per cent will have reactions of sufficient intensity to warrant interruption of therapy.

Folic acid therapy is of use only in the megaloblastic anemias in pregnancy.

The problem of hemoglobin synthesis in the pregnant woman, except in a very small percentage of patients, is essentially one of delivering an adequate amount of iron to her bone marrow.

TOTAL THERAPEUTIC RESULTS IN 1095 CASES

No.	Per Cent	
813	74	successful on oral iron
112	10	successful on oral iron plus HCl
44	4	successful on intravenous iron
8	0.7	megaloblastic anemia, successful on intravenous iron plus folic acid
118	11	were considered unsatisfactory therapeutic results

TABLE 7

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DISCUSSION *(Abstract)*

Dr. Curtis J. Lund, Rochester, N. Y.—From the work of Dr. Hamilton and others, as well as our own, I believe that it is obvious that the common denominator of the anemias of pregnancy is iron deficiency.

I should like briefly to mention two aspects of the problem that have interested us. The first, perhaps, is a little more on the theoretical, and the second on the practical side.

The first is the so-called question of what the older textbooks call "physiological anemia of pregnancy," which I think we must all admit does not exist. I cannot understand how an anemia can be physiological. If there is anemia, let us call it that. If there is no anemia, then let us say "apparent anemia of pregnancy." At what hemoglobin level does the apparent anemia become true anemia? In our experience the hemoglobin level rarely falls below 12 grams per cent when iron intake is excellent. This is slightly below the average that Dr. Hamilton used. Sometimes, however, it does, and then the diagnosis of true anemia must be entertained but it is by no means certain.

By determination of plasma volume it is possible to measure indirectly the volume of the red blood cells and then to calculate the total hemoglobin mass. Many physicians fail to realize that the total hemoglobin mass increases normally from 10 to 15 per cent during pregnancy in the presence of a mildly falling hemoglobin value. A patient in our study had a hemoglobin level of 9.5 grams (60 per cent) in the presence of a 25 per cent increase in total hemoglobin mass. She obviously was not anemic and did not respond to iron therapy. I agree with Dr. Hamilton that these are infrequent occurrences but nevertheless such a patient might be classified as an example of failure of iron therapy.

Without facilities for determination of plasma volume, which incidentally is a simple task in nearly any laboratory, we must rely on established methods. The color index, or more strictly, the mean corpuscular hemoglobin concentration and the appearance of the microscopic smear will often separate the apparent from the true anemias of pregnancy.

The clinical features of the problem have been made perfectly clear to you by Dr. Hamilton's excellent study. The oral administration of iron, occasionally supplemented by dilute hydrochloric acid and very rarely by the intravenous preparations of iron will give excellent clinical results most of the time. Occasionally patients will be observed who have something more than an apparent or an iron deficiency anemia, the numbers are small indeed, who will require folic acid, vitamins B and C, or liver extract. The number of such patients is exceedingly small and in no way justifies the existence and prescription of the "combined pill or capsule." The sheet anchor of anemia therapy in pregnancy is iron.

Dr. Stanley A. Hill, Corinth, Miss.—What form of hydrochloric acid was used?

Dr. Willis E. Brown, Little Rock, Ark.—Those of us engaged primarily in the academic aspects of medicine, frequently present papers of detailed scientific research, and it is commonly said, "Oh, it is all very well for you long-haired professors, but we can't do that in private practice." Never before have I heard a more excellent scientific presentation, not by a long-haired professor, but by a practicing clinician from his private office. I believe this establishes once and for all that scholarly attainment need not be confined to the cloistered halls or the ivory towers, but is a function of careful study and can be done anywhere.

These two presentations this morning, this paper and the discussion by Dr. Lund, bury once and for all the old concept of a "physiological anemia." This careful study utilizing new tools has demonstrated that some anemias are a matter of blocked absorption; the problem is no longer occult but becomes very obvious. The problem of anemia of pregnancy thus is a question of careful study of the patient and proper addition of the necessary blood elements.

Dr. Hamilton (closing).—The hydrochloric acid that we used was not drops of dilute hydrochloric acid. I have not found enough women who have steady enough gastrointestinal tracts and insensitive enough olfactory tracts to be willing to take the liquid dilute acid. What we used were capsules of glutamic acid, marketed under the trade name of acidulin,® which are the equivalent of 10 minims to each capsule as it is dissolved in the stomach.

ROENTGENOLOGIC CONSIDERATIONS OF GASTRO-INTESTINAL LESIONS CAUSING HEMATEMESIS*

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Among the many and varied diseases, few more definitely indicate potentially grave organic changes than bleeding from an internal organ. The concern of both the patient and his physician about hematemesis is certainly justified. You, as the family doctor, are generally the first consulted.

When frank hematemesis has occurred you would first ascertain that it is not of orificial origin. The clinician will then try to determine its probable source from the history, physical signs, results of clinical tests and indefinable indexes that you have learned from experience. Often by one's own resources the clinician can adjudge the patient's condition and determine the cause of bleeding with uncanny accuracy; however, even with this ability no one realizes more keenly than he that the diagnosis is not complete without confirmation of his opinion with roentgenologic examination. In the majority of instances, by

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this means alone the nature of the lesion, the exact site, size and presence or absence of complicating factors can be determined preoperatively. Also, in many instances, where the clinical data are quite inconclusive, the diagnosis can hardly be established without thorough roentgenologic investigation. This primarily applies to those patients having small lesions and presenting symptoms which are vague and atypical.

Hematemesis may occur from several portions of the gastro-intestinal tract but there are certain portions which should be first considered as the more common sources of bleeding. In such instances, the internist takes these into consideration and requests study of that portion of the intestinal canal more likely to be involved. But the radiologist is obliged to examine each adjacent organ with equal care, realizing that the source of hemorrhage is being sought and the symptoms may be masked. As a rule the referring physician's first thought is of peptic ulcer. This is logical since peptic ulcer is known to be a common source of bleeding. The patient is therefore usually referred for study of the upper gastro-intestinal tract which the radiologist should examine with much care.

In examination of the esophagus, varices should be remembered. They are usually secondary to cirrhosis of the liver. Profuse hematemesis often results from rupture of the distended vessels. Usually the lower portion of the esophagus is affected and the veins are greatly dilated and nodular. On roentgen examination the varices present the picture of bulbous shadow defects intruding into the lumen with deep crevices between them and strongly resemble closely grouped polyps or a small sessile polypoid tumor, both of which rarely occur in the esophagus. These may not be seen if the veins are collapsed or emptied. In some cases they will not fill and the diagnosis cannot be made roentgenographically. Templeton[6] reports 10 cases seen at postmortem examination that had been care-

FIG. 1

Carcinoma involving esophagus at junction of middle and distal third.

FIG. 2

Carcinoma of esophagus. Advance perforation and large abscess in lung.

fully examined for dilated veins within the year before death. In only four instances were the varices definitely demonstrated.

Also, in the esophagus we must consider primary new growths, both benign and malignant. The former are extremely rare and produce the same picture as noted in any other portion of the gastro-intestinal tract. The carcinoma is not as scarce, occurring more frequently in men than women but is not so uncommon in women as generally believed. It also produces a picture like that noted in the other portions of the canal. It involves a relatively short portion *(Fig. 1)* of the tube and progresses by extension laterally through the wall into the mediastinum and may perforate into the lung itself resulting in a large abscess *(Fig. 2)*. A sudden transition from the normal esophageal wall to a narrow, fixed and irregular portion of short length, then a sudden change back to normal at the distal end of the lesion is the typical condition noted at fluoroscopy and on the roentgenogram, and on this basis, the diagnosis is made. Dilatation of the esophagus above a benign lesion is common but dilatation proximal to carcinoma is unusual. The theoretical reason for this lack of dilatation is that the disease has a fairly rapid course and the resulting obstruction, whether partial or complete, is of insufficient duration to permit dilatation.

Next, as we enter the stomach one must consider the presence of a hiatal hernia. In the differential diagnosis of this condition we must also consider one of three conditions: (1) the phrenic ampulla, (2) the short esophagus type hernia, and (3) para-esophageal hiatal hernia.

The phrenic ampulla as pointed out by O'Bannon[4] may be misinterpreted as a short esophagus type of hernia, and for this reason it is quite important because it is apparently of no clinical significance. Since this is entirely a normal or functional condition, it is essential that it be recognized and differentiated from a short esophagus with a portion of the fundus of the stomach above the diaphragm.

Occasionally the first indication of the presence of a hiatal hernia is obtained from a chest film. The finding of an oval air-filled shadow behind the heart will represent the cardiac portion of the stomach. The cardia is not seen as usual below the diaphragm. Such shadows should be confirmed by fluoroscopic examination using an opaque meal.

The congenitally short esophagus with a hernia or rather consequent presence of a portion of the fundus of the stomach above the diaphragm, when examined during fluoroscopy, is seen to enter directly into the apex of the bulbous dilatation. On turning the patient on his abdomen, gravity allows the meal to flow into the pyloric portion of the stomach partially emptying the fundus of the stomach. The coarse gastric rugae can then be visualized and clearly identify this region as a portion of the stomach. This condition is the result of incomplete embryologic development in which the stomach has never been below the level of the diaphragm, hence, is not a true hernia of a once normally placed organ. The congenitally short esophagus is fairly commonly associated with a stenosis at the junction of the esophagus with the thoracic stomach, and chronic peptic ulceration in this region is a fairly common complication.

With the presence of the para-esophageal

FIG. 3

Esophageal-hiatal hernia with stomach above diaphragm and proven ulcer about level of diaphragm.

hiatal hernia placing the patient on his back, turn moderately to the left, and observing fluoroscopically, the first swallow of barium is seen to descend the entire esophagus and enter the abdomen, and then appear in the herniated portion of the stomach. By rotating the patient a position may be found where the completely filled esophagus can be demonstrated to pass around the herniated portion of the stomach and enter the fundus of the stomach. If the patient is turned on his abdomen, gravity will allow the barium to flow into the pyloric end of the stomach and the characteristic appearance of the gastric rugae will regularly be demonstrated in the herniated portion of the fundus of the stomach. This is a true hernia and is seen from childhood to old age, but is more frequent in individuals past the age of 40 and may be either congenital or acquired. Peptic *(Fig. 3)* ulceration of the herniated portion of the stomach is a moderately common complication of this type of hernia.

Gastric varices are found around the cardia, but occasionally are seen in the fundus. They produce smooth rounded masses which protrude into the lumen and measure about 1 or 2 cm. in diameter. The co-existence of esophageal varices is very significant, for esophageal and gastric varices frequently exist together. If esophageal varices cannot be demonstrated, the differentiation from carcinoma becomes increasingly difficult. Hare[2] points out that the grouping of the lesions about the esophageal orifice without evidence of obstruction or involvement of the abdominal portion of the esophagus, and with the presence of an enlarged spleen which often compresses the lateral aspect of the fundus of the stomach, is much more suggestive of varices than of carcinoma.

The most frequent cause of bleeding in the stomach is gastric ulcer. The primary sign of an ulcer is the barium-filled crater, the niche, or its exaggerated form, the accessory pocket. When the ulcer is situated favorably and is seen in profile *(Fig. 4)* it appears as an herb-like prominence projecting from the barium-filled stomach. It commonly projects beyond the normal line of the gastric lumen. When seen face on, with the gastric walls approximated, the crater appears as a rounded *(Fig. 5)* dense spot amid the rugal markings with the rugae commonly converging on this spot. Secondary manifestations are usually present but unless the crater can be dem-

FIG. 4

Gastric ulcer on lesser curvature of stomach. Also an associated duodenal ulcer was present with deformity of the bulb.

FIG. 5

Spot film showing ulcer crater on posterior wall of stomach.

onstrated, a diagnosis of ulcer is not justified. Spot films are of much value in demonstration of this niche or crater, particularly in those patients with gastrospasm or secretion in the stomach because in many instances the deformity may be obscured on the routine films. Sometimes it is of value to place the patient in position fluoroscopically in order to show the deformity to best advantage.

Gianturco[1] has added greatly to our ability to demonstrate by double contrast the normal rugae of the stomach and small pathologic lesions not previously so well visualized *(Fig. 6)*. I have found, in many instances, that if the patients are given a teaspoonful of rugar® and told to swallow it, the esophagus can be well examined and the air swallowed during this time will produce results like those after the patients have taken only a small amount of barium *(Fig. 7)*. When sufficient air has not been swallowed, mineral oil can be given the patient, using 2 to 3 ounces in order to obtain desired results. This method has been most helpful in many instances.

When it is clear that an ulcerous lesion is present, the differential diagnosis of benign ulcer from ulcerating carcinoma and malignant ulcer becomes highly important. Figures can be quoted from the literature to show (1) cancer rarely, if ever, develops in benign gastric ulcer, (2) that it may occur in a few cases, or (3) that it occurs in as high as 90 per cent of the cases. According to Stewart, 9.5 per cent of cases of chronic gastric ulcer become carcinomatous and 17 per cent of gastric carcinomas originate in chronic ulcers. Stevenson and Yates,[5] in reviewing the literature and 117 gastric ulcers in their series, came to the conclusion that in spite of the various criteria for differential diagnosis of benign gastric ulcer and gastric carcinoma, that they were unable, on reviewing the roentgenograms and fluoroscopic findings, to find any difference in six malignant cases erroneously diagnosed as benign, as compared to the proven benign ulcers in this series. They felt, therefore, that it is impossible at any one

FIG. 6

Penetrating ulcer high on posterior wall of stomach wall demonstrated by double contrast.

FIG. 7

Double contrast stomach showing carcinoma in prepyloric region, a polyp just proximal to this and a large ulcerating carcinoma in the upper portion of the fundus near the cardia.

roentgenologic examination definitely to differentiate a gastric ulcer from a gastric carcinoma. They further added that if adequate criteria for benignancy are kept in mind, this single procedure is about as accurate as any test in the field of medicine.

Benign tumors of the stomach are rather rare, but manifest themselves clinically through their tendency to bleed. The roentgen characteristics are a central rounded defect obliterating the rugae *(Fig. 8)*. They are sharp, smooth and well circumscribed. They are frequently multiple and peristalsis passes clearly through the area of the tumor. Displacement of the defect may be produced by manipulation or change in position. Polypi of the antrum occasionally prolapse through the pylorus into the duodenal bulb giving a filling defect there. Because of their comparative lack of symptoms and absence of physical findings, these tumors are rarely diagnosed clinically. They may occur at any age and should be demonstrated by careful roentgenoscopy.

Carcinoma of the stomach is the second most frequent lesion of the stomach to cause gastrointestinal bleeding. Histologic variations affect the factors of tumefaction and ulceration.

Advanced mucoid cancer usually produces a roentgenologic syndrome that is pathognomonic. In most cases it appears as a gross mass projecting from a wide base far into the gastric lumen. As a rule, the tumor is pitted with multiple ulcerous excavations that are visible as irregularities of the tumor's internal margins. Occasionally it may be largely destroyed by ulceration. The involved portion of the gastric wall is sharply demarcated from the uninvolved portion.

Advanced scirrhous cancer gives rise to a characteristic picture. With its tendency to originate in the pyloric segment and to encircle the stomach, the viscus often assumes the shape of a funnel. Diminution of the gastric capacity is a common feature of scirrhous cancer resulting not so much from intrusion of the tumor as from shrinking, shortening and loss of elasticity of the affected seg-

FIG. 8

Large polyp in the cardia of the stomach of a five-year-old white boy.

FIG. 9

Gastro-jejunal ulcer in a 42-year-old Negro woman. Note narrowing of adjacent bowel.

ment. Ulceration is constant, and occasionally deep but most often shallow and the surface of the growth is usually smooth.

Of the sarcomas involving the stomach the lymphosarcoma is the most frequent and can cause bleeding by ulceration. These lesions are as a rule indistinguishable from carcinoma in nearly every instance. In the stomach roentgenologic findings are reported variously as: (1) negative in cases of early involvement; (2) gastric ulcers which resemble simple benign peptic ulcers; (3) diffuse infiltration of the entire stomach with or without peristaltic movement, depending on the amount of involvement of the muscularis; (4) polypoid lesions indistinguishable from carcinoma; or simply as (5) obstructing lesions at the pyloric end of the stomach, type undetermined. In 25 cases reported by Weber, Kirklin and Pugh,[7] 19 were given unqualified roentgenologic diagnosis of carcinoma, and in none was the diagnosis of lymphoblastoma rendered from the roentgenologic and clinical findings considered together. Holmes, Dresser and Camp[3] point out that the possibility of this disease should be considered in all atypical cases showing carcinoma-like deformities.

Another condition which many of us encounter is the postoperative stomach. In gastro-enterostomies, particularly those performed for peptic ulcer, recurrent ulcer is not uncommon. The findings of these ulcers is simplified by identifying the stoma and the loops of intestine adjacent to the stoma. Here, as in other examinations of the gastro-intestinal tract, roentgenoscopy is of prime importance and the administration of small amounts of barium is of utmost importance especially until the parts have been well identified. If the examiner orients himself early in the examination, craters about an enterostomy stoma can be determined with a relative high degree of accuracy. The reason for this lies in the fact that these craters have sites of predilection. Following gastrojejunostomies, most of the craters lie in the wall of the jejunum opposite the stoma or in the efferent loop within 3 cm. of the stoma *(Fig. 9)*. When filled with barium, the craters have the characteristics of other ulcers. They are rounded and neither their size nor shape changes with palpation. They may vary in diameter from a few millimeters to two or three centimeters *(Fig. 10)*. When viewed in profile, the bases of the crater are indented by rolled margins and when seen in the frontal projection, a clear halo often sets the crater off from the rest of the barium. Radiating folds may occur and sometimes an incisura is produced by a pulling in of the wall opposite the crater by a scar.

Prolapse of the gastric mucosa is a cause of gastro-intestinal bleeding which if it is of a gradual oozing type is usually by bowel and may give an anemia which would suggest a lesion of the right colon. When, however, the bleeding is profuse it may be by mouth and cause the symptoms of hematemesis. This is found when the mucosal folds of the stomach are redundant and peristalsis pushes them through the pylorus, thus forming a filling defect in the base of the bulb or a central defect within the bulb when large. The pyloric sphincter causes pressure which produces congestion, and secondary ulceration within the mucosa and bleeding follow.

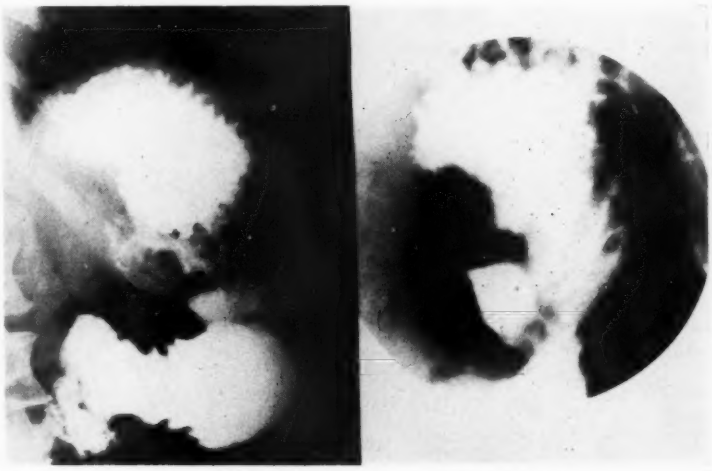

FIG. 10

Rather large gastro-jejunal ulcer in 34-year-old white man. Note rather large radiating folds, converging to ulcer.

Duodenal ulcer is the most frequent cause of gastro-intestinal bleeding. It is found more frequently within 2 cm. of the pyloric sphincter, usually near the lesser curvature and with equal frequency, on the anterior and posterior walls. At least 95 per cent of the duodenal ulcers occur in the bulb and, according to Beilin, ten times more frequently than gastric ulcers.

Approximately three-fourths of the duodenal ulcers are readily demonstrated with the opaque meal and roentgen ray. In such cases, the bulbar deformity produced can be exhibited without the employment of special measures and is so obvious that it can scarcely elude observation. Because of this, the usual illustrations used are of the grossly deforming ulcers which produce a so-called clover-leaf deformity, or pine tree deformity, or the serrated asymmetric bulb, and tend to create the impression that the diagnosis is not only easy but that in the absence of readily elicited and conspicuous bulbar deformity, duodenal ulcer can be excluded.

It is the remaining one-fourth which to some degree are difficult to demonstrate and can be revealed only by technical strategy and attentive study that test our ingenuity. The reasons for this difficulty may be several, a few of which are: ulcers in patients hard to examine; ulcers accompanied by marked irritability of the bulb; those producing only minimal defects in the duodenal contour; those exhibited only as a dense fleck in an otherwise normal bulbar shadow.

Tumors of the duodenum usually produce gradual bleeding by bowel but occasionally hematemesis occurs and is coffee ground in type. The duodenum is the most involved portion of the small bowel for its length. The deformities or filling defects produced by a tumefactive lesion may be described as marginal, encircling or central. An analysis of this deformity may lead to an accurate estimation of the histologic type.

The various benign neoplasms exist chiefly as pedunculated intraluminal growths which produce central filling defects in the column of opaque meal. When small they are frequently overlooked, but as they grow larger *(Fig. 11)* they tend to cause partial obstruction with dilatation of the bowel proximal to the lesion. The intramural submucosal tumors exhibit marginal defects with smooth contours. The mucosal pattern is flattened but preserved over the tumor except in cases in which ulceration has occurred. The leiomyoma is the most common in this group.

The most frequent malignant tumor to involve the duodenum is the adenocarcinoma, and the region of the ampulla of Vater is most often involved *(Fig. 12)*. The deformity produced is short and sharply limited. It may be marginal or encircling. The relief pattern formed by the intestinal mucosa is frequently destroyed entirely and in its place the luminal

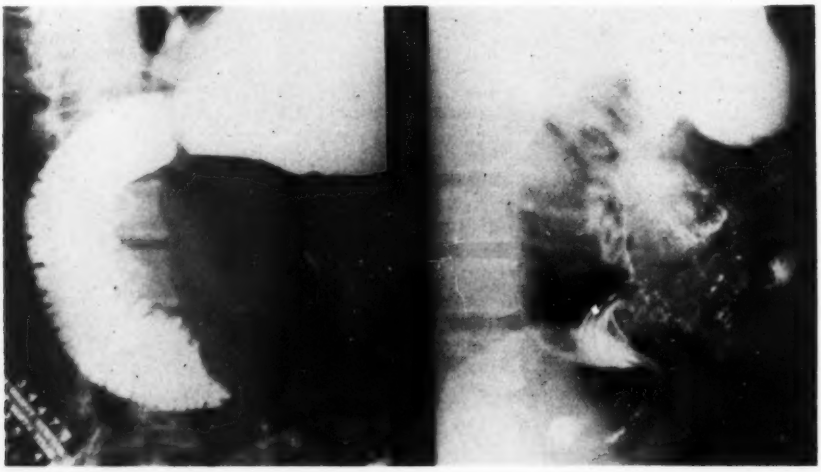

FIG. 11

Polypoid tumor in third portion of the duodenum producing almost complete obstruction.

aspect of the tumor is marked by rough jagged contours. There may be partial or complete obstruction.

For the past two years we have been doing emergency examinations on bleeding patients. Many clinicians feel that the decision as to the proper treatment of a bleeding patient can be reached with less delay if this type of examination is made. The patient is examined prone and supine and, if very weak, with little or no palpation. The esophagus can be examined for varices with rugar® or heavy barium. If a lesion is discovered in the esophagus, stomach or duodenum, then the decision as to emergency surgery can be made more accurately.

SUMMARY

Some of the more common lesions causing hematemesis have been illustrated and their roentgenographic characteristics briefly discussed. Certainly, as pointed out, gastric or duodenal ulcers are the most common causes.

The importance of early examination is to be kept in mind. The cause of bleeding is demonstrated in a higher percentage of patients if examined during the time of bleeding, particularly in instances of massive hemorrhage.

Regardless of the care in examination, including gastroscopy and surgical exploration, there are some 15 to 17 per cent of cases in which no pathologic condition is found.

We are dealing with a problem which may tax us to our utmost without finding the true answer, but one which in most instances we can help solve with patience and thorough study. Therefore, in closing, let me urge that we do as Roentgen when asked what he thought when he saw the first image on the emulsion. His answer was he did not think, he investigated.

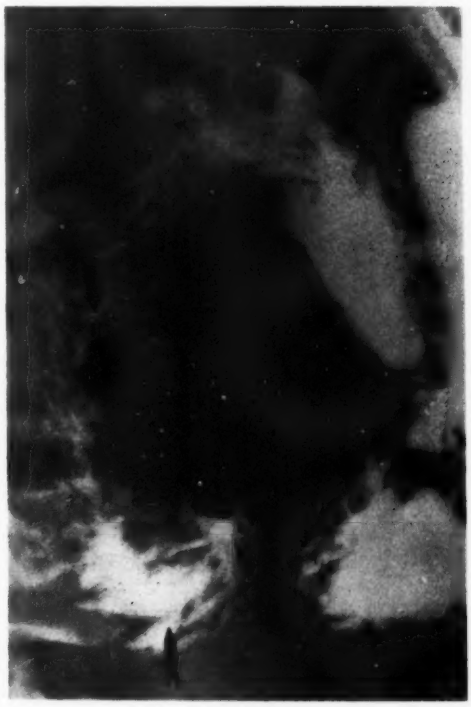

FIG. 12

Marginal type deformity produced by adenocarcinoma in region of ampulla of Vater.

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DISCUSSION *(Abstract)*

Dr. Stephen W. Brown, Augusta, Ga.—Frequently patients with upper gastro-intestinal tract hemorrhage can be saved by proper surgical therapy; therefore, it is necessary for us to make the exact anatomical and pathological diagnosis as often as possible.

I agree with Dr. Moreton that we no longer fear to do x-ray examinations on the upper gastro-intestinal tract of patients with acute hemorrhage. I feel quite sure that a properly executed x-ray examination can in no way harm the patient and often gives invaluable information. When the patients show signs that the hemorrhage is under control, it is safe and may be wise to wait several days before making the examination; but when there are signs of increased or uncontrolled hemorrhage the examination becomes an emergency, so that the proper surgical treatment can be instituted.

One must not depend too much on the history of a previous peptic ulcer when considering the diagnosis. Just recently I saw a patient with severe upper gastro-intestinal tract bleeding who had had an x-ray diagnosis of duodenal ulcer twenty years earlier and in whom I had demonstrated a duodenal ulcer four years previously. One would naturally as-

sume that the patient had a bleeding peptic ulcer; however, the x-ray examination revealed a small ulcer on the greater curvature of the stomach which appeared to be malignant and the duodenal ulcer could not be demonstrated. At operation, this proved to be lymphosarcoma of the stomach which was resectable.

One must not be afraid to say after the examination that he cannot demonstrate the cause of the bleeding. Far too often one is inclined to make the diagnosis of duodenal ulcer because the cap is slightly irritable or irregular. If the lesion cannot be demonstrated on one examination, the examination should be repeated in several days using the special technic mentioned by Dr. Moreton. By grasping at a straw the radiologist may mislead the clinician for the hemorrhage may be due to such blood dyscrasias as leukemia, purpura or hemophilia.

It is far more important to make a correct diagnosis of hemorrhage due to benign lesions or sarcoma than of one due to carcinoma, because the chances of recovery are far greater in these lesions than in carcinoma.

RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF CEREBRAL VASCULAR ACCIDENTS*

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There has never been any doubt concerning the serious nature of a cerebral vascular accident or a so-called "stroke." From statistical analysis, we may expect that one in every ten of us will eventually die from some more or less abrupt disturbance of the brain. We are all familiar with the frequency with which these cases occur and the gravity of the prognosis; so it is incumbent upon us to give the matter serious consideration.

Cerebral vascular accidents occur without warning and demand immediate attention. Whenever a significant portion of the brain function becomes abolished or blunted, we know at once that the problem is a grave one, indeed. The security of the patient and his family is immediately threatened, and we find ourselves confronted with an urgent responsibility. How well do we meet this challenge to our professional trust? Are we keeping abreast of the constant advances? Are we acquiring and continuously improving the technical skills acquired for the various diagnostic procedures which have been developed? Are we, in honest self-appraisal, fully aware of our individual capacities and limitations so that we may wisely accept or transfer the responsibility involved? These are among the questions we must ask ourselves. More than ever before, the time has come for us to take stock and not only reacquaint ourselves with that which is already known, but look beyond today's threshold to tomorrow's promise of greater advances. The hope of this presentation is that it may stimulate interest and lead to more creative thinking in regard to this important subject. Thus we may better prepare ourselves to assume the responsibility for these problems with confidence, to think aggressively, and to nurture ideas which will hasten the progress urgently needed.

Most of us were taught that cerebral vascular accidents involved either a hemorrhage or a thrombosis. To differentiate was rather academic since there was no essential difference in the treatments. Until recently, the management of these cases has been so disheartening that we have tended to direct our energies toward other more rewarding ventures. We were inclined to content ourselves with a diagnosis of "stroke" and to limit our treatment to one of general supportive measures and vigilance. Although there has been no development offering an easy solution to the problem, in recent years our thinking has become clearly revolutionary. Much has been learned which has given us fresh hope and provided us with good reason to look to the future with increasing optimism. We may now expect our diagnosis to be fairly accurate and our treatment to be much more definitive, even dramatic on occasion.

Regarding the pathology of the various lesions loosely classified as cerebral vascular accidents, little which is new has been added. It is in the diagnosis and treatment that great improvements have been made; treatment now results in a cure of certain lesions, which might otherwise be fatal. Specific diagnosis thus becomes highly important, for not only does the management vary for the different lesions, but further, that which may be bene-

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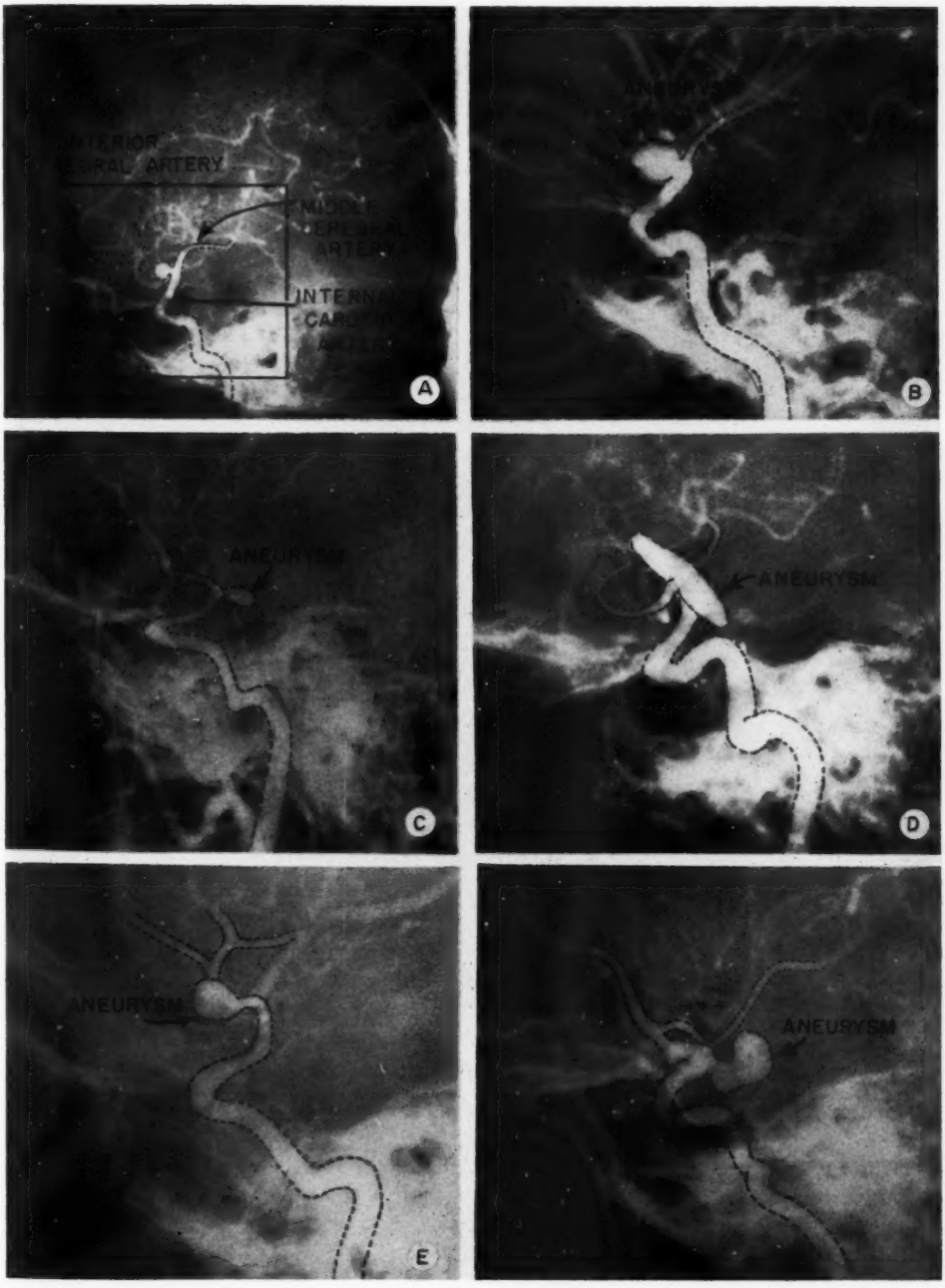

FIG. 1

Depicted aneurysms of the intracranial portion of the internal carotid artery. They all appear to be on the left side because some of the films were reversed to facilitate orientation.

ficial for one disorder may be harmful or even disastrous for another. This need for accurate diagnosis has led us not only to sharpen our bedside observations but to acquire new tests and procedures.

(1) Neurologic examination is, of course, very important but cannot be wholly relied upon. One may have a serious or lethal lesion without any neurologic findings of localizing value; further, there may be focal signs which cannot be relied upon. One must be particularly astute in assaying and interpreting the

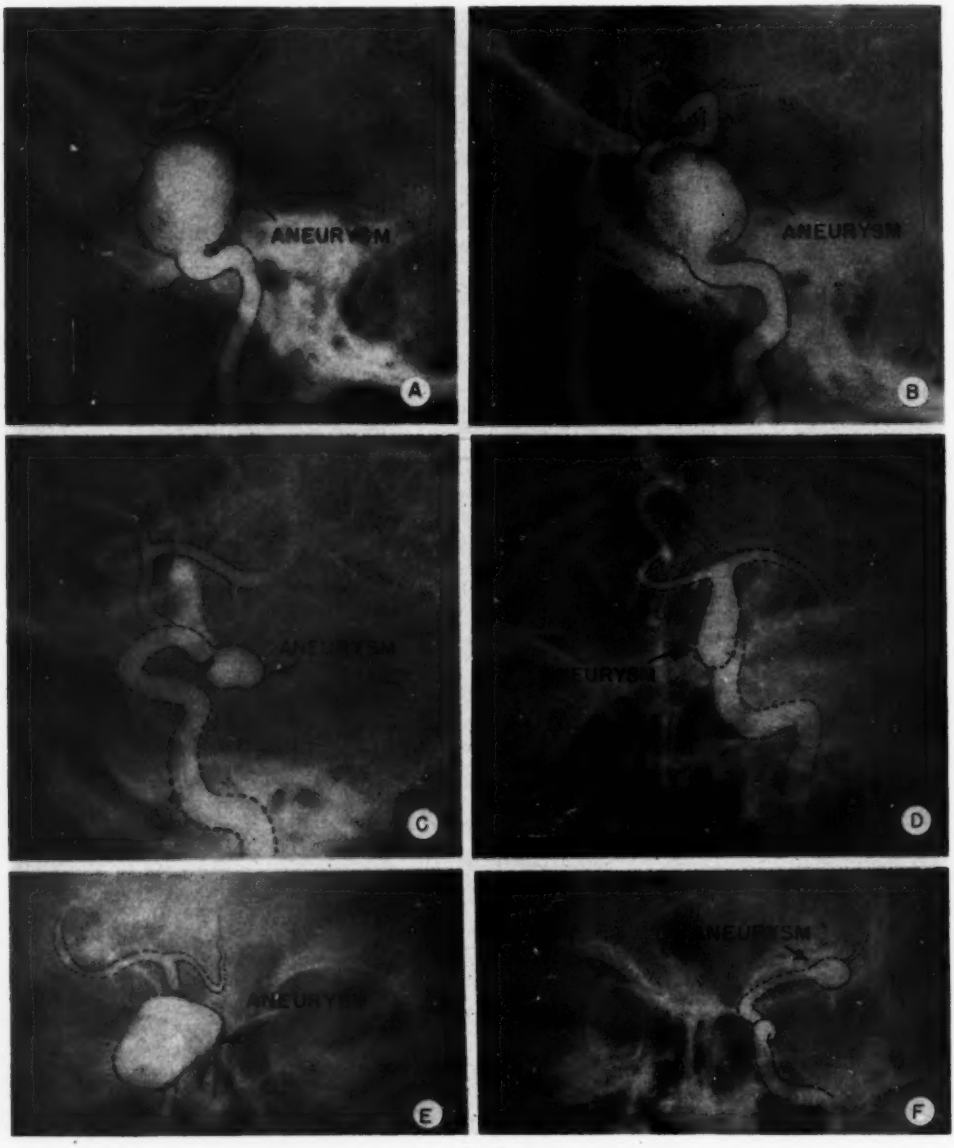

FIG. 2

A, B, and E are aneurysms of the internal carotid artery within the cavernous sinus. D shows an aneurysm at the junction of the anterior and middle cerebral arteries while F reveals an aneurysm of the middle cerebral artery.

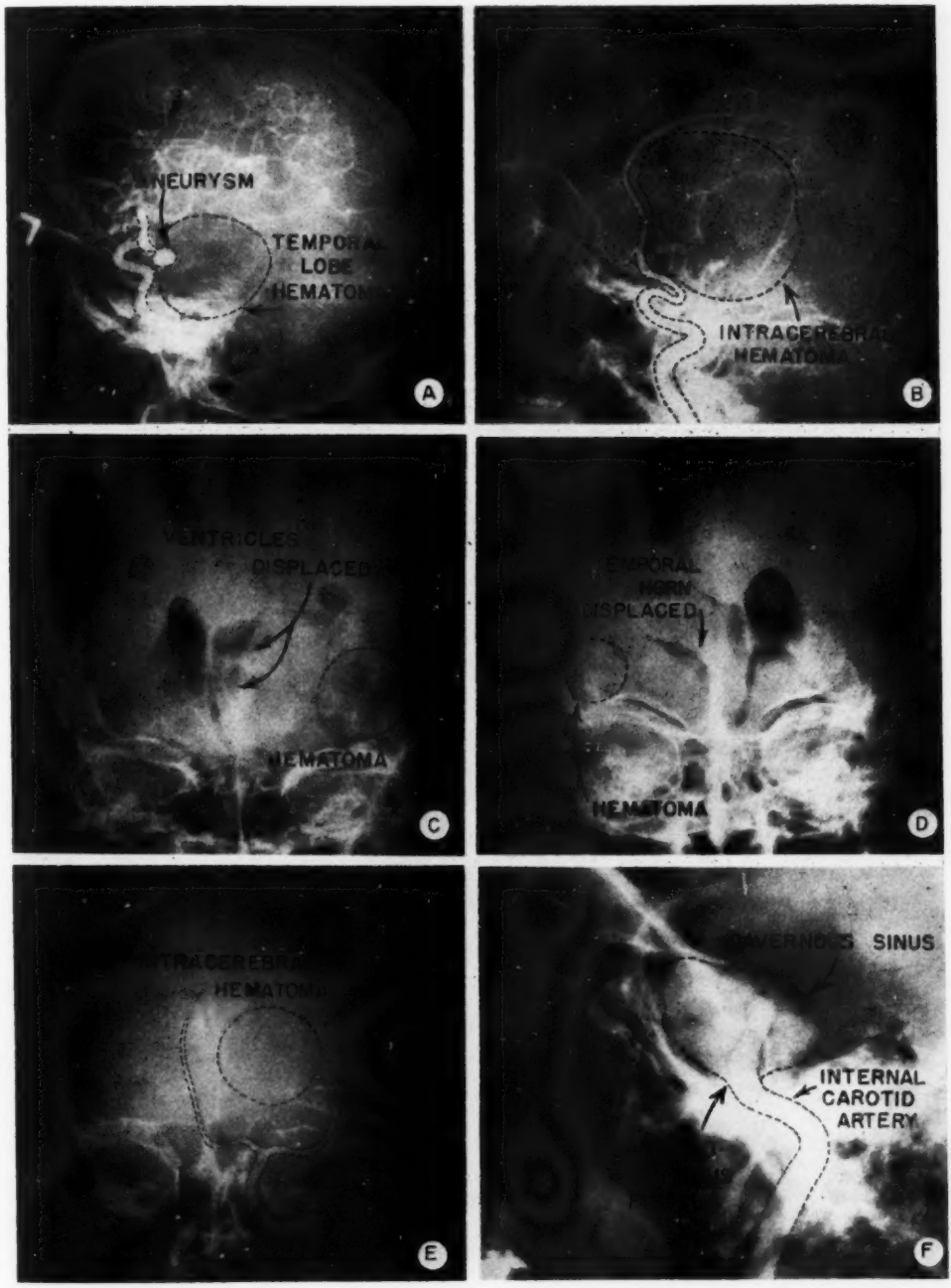

FIG. 3

The hematoma in A is displacing the middle cerebral vessels upward while the hematoma in B and in E is displacing the anterior and middle cerebral arteries in opposite directions. In C and D the hematomas were localized by the distortion of the ventricles. F shows the arterial blood emptying directly into the cavernous sinus so that none reaches the brain.

neurologic findings, and in this there can be no substitute for the sound judgment acquired through extensive clinical experience.

(2) Routine x-rays of the skull should be taken because occasionally they are very helpful; but it must be remembered that usually they show nothing and that these negative findings do not exclude a serious intracranial lesion.

(3) Spinal punctures, though not completely without risk, give useful facts regarding the intracranial pressure and cerebrospinal fluid content.

(4) Ventriculography is a well-known technic which has been used principally in the diagnosis of intracranial tumors, but it has also been found to be valuable in the differential diagnosis of cerebral vascular accidents.

(5) Cerebral angiography has come to be used widely in the diagnosis of vascular lesions and tumors of the brain. Although introduced by Moniz in 1927, this procedure has been fully appreciated only in the last decade. It has, in fact, been the prime stimulus in bringing about the improvements in our concepts of specific diagnosis and treatment of the lesions which are due to, or simulate, cerebral vascular accidents. Although angiography carries with it some risk, it has become a valuable aid. The information gained often lays the groundwork for specific therapy and sometimes provides a basis upon which lifesaving procedures may be carried out.

Aneurysms and arteriovenous malformations, well shown by angiography, are usually amenable to direct surgical attack.

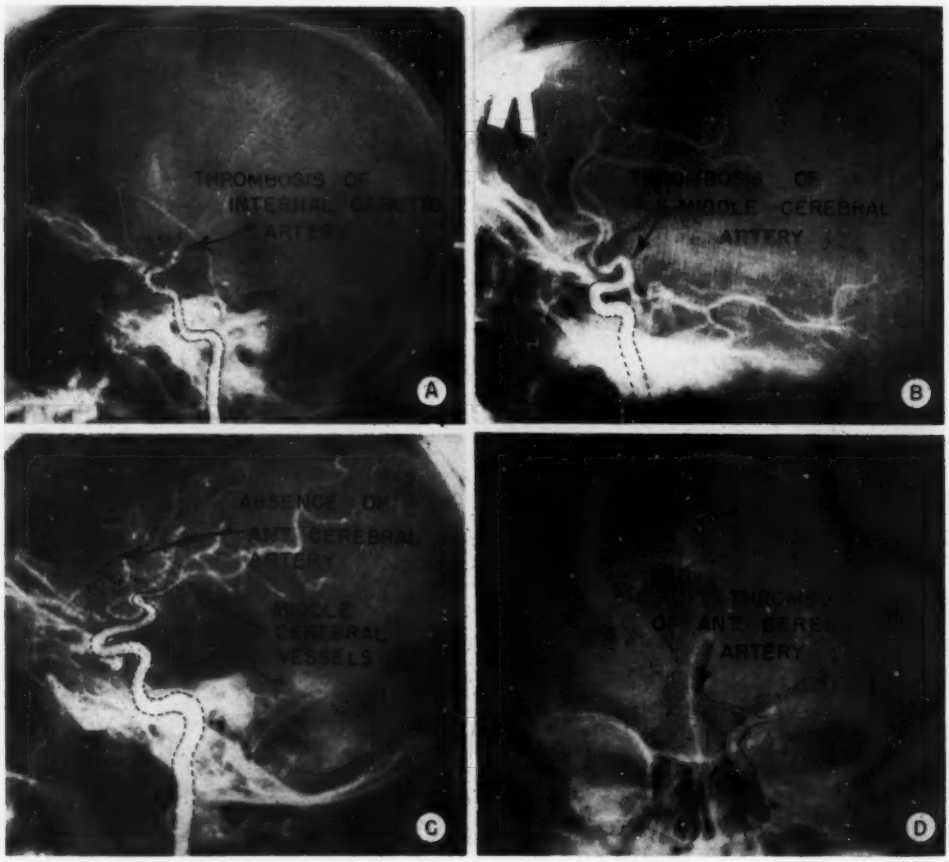

FIG. 4

Thromboses are demonstrated by failure of vessels to fill.

(6) Electro-encephalography is sometimes useful but its practical value has not been so great as we had hoped for initially. The information gained may supplement other findings and reinforce a presumptive diagnosis.

Thus it is evident that great progress has been made in laboratory tests and procedures. It should be emphasized, however, that there are few situations in the practice of medicine where the management is so difficult to standardize. Skilled judgment is required in deciding what tests should be made, when they should be made, and what course of action should follow. Here again, clinical experience offers the only satisfactory basis on which to build this judgment.

Once a specific diagnosis has been reached by means of the neurologic examination and indicated laboratory tests and procedures, attention can be turned to the consideration of a plan of treatment.

There are a number of disorders which may produce a "stroke," or a "stroke-like" state. Let us consider some of the more important ones:

(1) Intracerebral hemorrhage, once thought to be the most frequent cause of hemiplegia, is a condition which is often amenable to surgery. When the occurrence of a hematoma has been proved and its location determined, the surgical removal is a relatively simple process and involves little risk. The objective is to relieve the local and general intracranial pressure so that the regional blood supply may be improved and as much brain function preserved as possible.

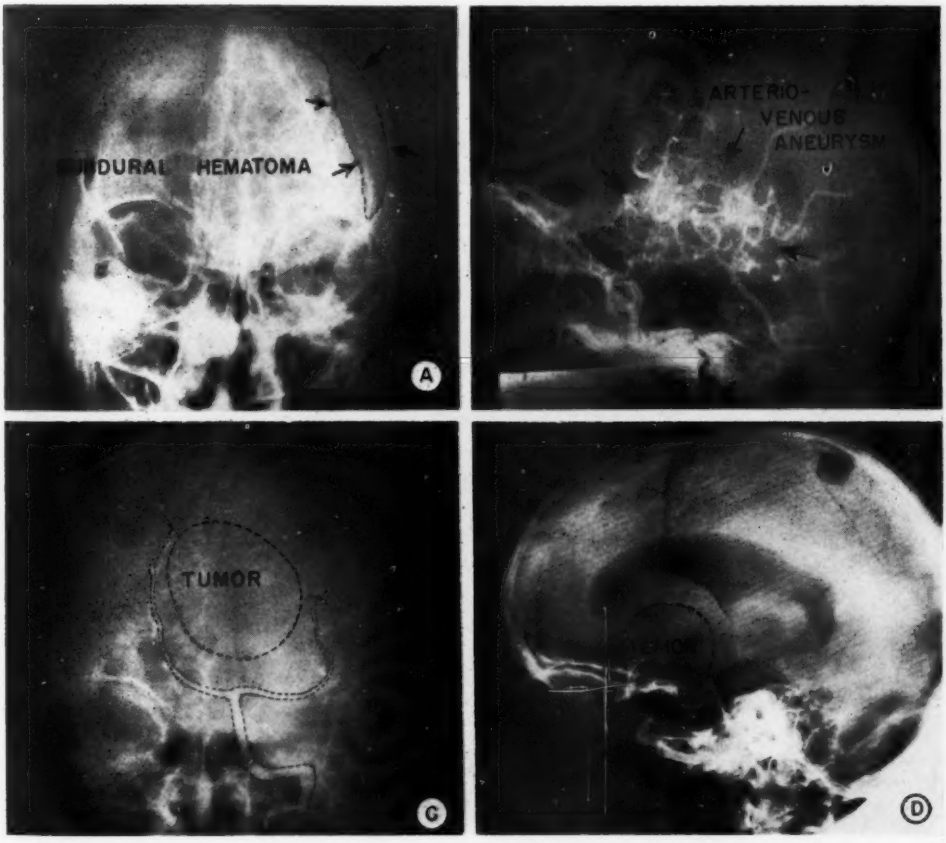

FIG. 5

In A the patient had abruptly developed aphasia and weakness of the right arm. In B hemorrhage caused sudden hemiplegia. In C coma developed rapidly so that a cerebral vascular accident had been suspected. Note the similarity to E in *Figure 3* which proved to be a hematoma. In D the patient had a convulsion which resulted in coma and hemiplegia.

(2) Cerebral thrombosis occurs more frequently. Here the therapy is directed toward the improvement of the cerebral circulation. During the initial phase, anticoagulants may be used to retard or prevent the extension of a thrombus, and, as such, may be of great value. There is scarcely any need to point out that the administration of anticoagulants when a hemorrhage is present could cause further bleeding and be disastrous. Here, once more, we see clearly the importance of accurate diagnosis before definitive treatment is inaugurated. Sympathetic blocks sometimes produce dramatic improvement in neurologic function, but they, too, may be contra-indicated when hemorrhage has occurred.

(3) Subarachnoid hemorrhage is usually the result of a ruptured aneurysm in the vicinity of the circle of Willis, but may be associated with an intracerebral hemorrhage, trauma, vascular tumor or vascular malformation. It is in this group that arteriography, as a diagnostic procedure, is particularly rewarding. Recurrent bleeding from the common berry aneurysms may often be prevented by clipping or ligating the neck of the aneurysm or the associated vessels entering the aneurysm.

(4) Arteriovenous fistulas may arise from aneurysms, malformations, or trauma. These lesions may be identified by angiography and often corrected by surgical procedures. In these lesions the blood supply to the adjacent regions of the brain is impaired because of the wasteful shunting of blood directly into the venous channels. The surgical correction of these lesions therefore usually results in significant improvement in the cerebral circulation.

(5) Embolism of cerebral vessels also must be kept in mind. In this connection it should be pointed out that, in addition to the treatment of the cerebral lesion, treatment of the primary lesion should not be overlooked in order to reduce the incidence of further embolism.

(6) We must not overlook the possibility of brain tumors. They more often produce progressive symptoms, but the signs may appear abruptly and simulate a cerebral vascular accident. This is especially true of vascular tumors and rapidly growing malignant gliomas.

(7) Chronic subdural hematomas not infrequently cause the dramatic appearance of hemiplegia, coma, or convulsions and may easily be confused with an intracerebral hemorrhage or thrombosis. There are, of course, other less common disorders such as the effect of certain infectious toxins and metabolic disturbances, and these must not be forgotten in the differential diagnosis.

Thus, being cognizant of the multiplicy of lesions which may produce the clinical picture of a "stroke" and the great variance in their treatment, we must underline our need for highly accurate diagnostic procedures. Let us, then, consider some of these.

In the foregoing discussion, only brief references have been made regarding treatment. As we come to appreciate the numerous variations of pathologic condition which may result in this wide range of clinical states, we realize the necessity for creating a specific plan of therapy for each individual patient. It necessarily follows that we must continually re-evaluate and revise the plan of treatment in terms of changes in the patient's condition.

Although the details of treatment may vary widely, let us bear in mind that all plans of treatment presuppose this general objective: the maintenance of an effective cerebral circulation both to the involved region as well as to the brain generally. Keeping this objective in mind provides a practical basis upon which to predicate our treatment.

Though specific and widely varying plans of treatment are required in individual cases, we do much to simplify this highly complex problem if we keep constantly before us this single ultimate aim.

The procedures which involve surgical attack upon the lesion, such as removal of a hematoma or the clipping of an aneurysm, are the direct responsibilities of the neurosurgeon, and detailed consideration of these is beyond the scope of this discussion.

Much attention has been directed recently to factors which influence cardiac efficiency, adequate blood pressure, and the quality of the circulating blood. Let us make certain that we keep pace with these advances so that we may better utilize the knowledge gained in applying and continually improving upon the practical measures which have evolved.

We have already seen the importance of

therapy directed at improving the general circulation. This is a problem of immediacy and hence this responsibility must be assumed at the very outset; for failure immediately to institute measures which improve the status of the circulation may cause irreparable brain damage.

The importance of the respiratory component of the circulation has long been stressed, and, in this connection, the necessity for relieving any obvious obstruction has been apparent. It is only recently, however, that we have fully evaluated the significance of minor resistance to the passage of respired air. The simple expedient of maintaining a completely unobstructed air flow can increase the efficiency of the cerebral blood flow markedly. Though the effect of posture and the use of an air way and suction are not new technics, the value of tracheotomy has only recently been appreciated. In the light of this development it may not be amiss to suggest that the insertion of a tracheotomy tube be seriously considered in the treatment of any patient whose survival from a cerebral lesion is in doubt. Our basis for this reference may be found in the many cases in which this technic has resulted in immediate improvement.

This discussion of the management of cerebral vascular accidents and other similar lesions has been, by intention, confined to the more general aspects of these disorders. We have highlighted specific approaches to treatment only for the purposes of emphasis and illustration. Our primary goal has been to so stimulate your interest that you may share actively in this responsibility, which accrues to us all.

133 Doctors Building

THE DIAGNOSTIC EVALUATION AND A SIMPLE TECHNIC FOR THE REMOVAL OF VARICOSE VEINS*

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Medical literature from the earliest times is replete with writings concerning varicose veins and varicose ulcers of the lower extremities. No attempt will be made here to review this voluminous literature. The significant contributions have been few.

From the diagnostic standpoint, the test first described by Brodie, and soon afterwards popularized by Trendelenburg is the most useful. It is the easiest to perform and interpret, and it gives all the necessary information regarding the competency of the valves of the superficial veins. Many who have studied this condition have devised their own modifications of the Brodie-Trendelenburg test or described new diagnostic procedures, but too often they cannot be universally applied and frequently the information obtained may be difficult to interpret or even fallacious.

Many forms of treatment for this condition have been instituted. The injection treatment was described shortly after the invention of the hypodermic needle. Avulsion of segments of the vein, and stripping of the vein had been described long before that. Local ligation at various levels was advocated as one of the earliest forms of treatment. These procedures have all been reintroduced in refined technics with the discovery of antiseptics, newer sclerosing solutions, better surgical technic, and a better understanding of the whole problem. The most significant advancement in the surgical treatment of varicose veins was the ligation of the long saphenous vein at the sapheno-femoral juncture as described by Homans in 1916. Without this procedure, all forms of treatment fail.

About 50 per cent of the patients present themselves for treatment because of pain and discomfort of the lower extremities. The other half of the patients not only have pain and discomfort, but changes in the skin which are unsightly or have gone on to ulceration. Very few patients request treatment because of cosmetic reasons alone. Pain or discomfort due to varicose veins is usually quite characteristic. It ordinarily comes on after the individual has been on his feet for some time, and is usually worse toward the end of the day. However, it may begin as soon as the individual arises, particularly where the condition is severe and there is marked retrograde flow. A sensation of fullness, bursting pain in the severe cases, and localized stinging sensation from the rupture of small very superficial varices are

*Read in Section on Surgery, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

common symptoms. A heavy, tired feeling of the lower extremities often accompanied by painful feet, is the most common complaint.

It is important to determine from the history whether or not there has been a phlebitis of the deep veins. This can usually be established definitely from the history alone, but will be unmistakably evident from the physical examination if such a deep phlebitic process has been of a degree severe enough to cause permanent sequelae. The presence of a post-phlebitic syndrone has definite bearing on the success of the treatment of varicose veins but most certainly is not a contraindication to surgery for the relief of symptoms due to superficial secondary varicosities.

The physical examination also will determine whether or not there exists any pelvic condition, such as tumor, of which the varicose veins are but a secondary manifestation. It is important also to determine the condition of the arterial supply of the extremity. However, it should be realized that impaired arterial supply is not always a contraindication to the surgical treatment of varicose veins which are producing stasis, thus further embarrassing the nourishment of tissues, particularly of the leg and foot. In fact, the decreased arterial circulation may be an added indication for the surgical relief of stasis, thus making it possible for the diminished arterial supply to provide barely adequate rather than inadequate nourishment to the tissues.

The diagnostic evaluation of the saphenous systems of veins can be quickly accomplished by the Brodie-Trendelenburg test considered with the history and general physical examination. The examination of the veins themselves for incompetence and retrograde flow is carried out in the following manner. First, the patient stands for inspection of the extremities exposed from the groin downward. In most instances, where the symptoms are due to varicose veins, these veins will be visible. However, in obese individuals and sometimes in those whose panniculus is not particularly thick, the veins may not be visible. In addition to the inspection of the extremity, palpation along the course of the long and short saphenous veins may give additional information. In fact, if the veins cannot be seen, palpation may be an important aid in determining the tension and whether or not retrograde flow exists.

After the extremities have been examined with the patient standing, he is asked to lie down and the extremities are raised to empty the superficial venous system as much as possible. Without applying pressure or tourniquet the patient again stands. If it is apparent that the superficial veins of the leg fill rapidly (up to the level of the knee in less than 40 seconds), the presence of incompetence of the valves and retrograde flow of blood is definitely established. These findings easily determined in a patient with the above complaints clearly indicate that treatment should be instituted unless contraindicated.

It is most important to keep in mind the fact that the competency of the veins varies from time to time, from day to day, and even from hour to hour. Veins which appear perfectly competent early in the day may be definitely incompetent if the patient is examined after being on his feet for some time. This variance in the competency of the veins further emphasizes the importance of the history; and it is also a factor of great importance in determining the best form of treatment.

In the treatment to be described it makes little difference whether or not there is incompetence of the communicating veins. However, this may be determined by having the patient lie down again, raising his extremities, making pressure either digitally over the sapheno-femoral juncture (as was described by Brodie) or by placing a tourniquet around the upper thigh and having the patient stand again. If the veins of the leg again fill rapidly, it is apparent that there are incompetent communicating veins of the long, the short or both saphenous systems, or an incompetent short saphenous system alone, which will produce almost the same findings. The fact that the competence of these veins varies from time to time makes it impossible to determine satisfactorily the location of all the incompetent communicating veins because those that may be competent at the time of the examination later may be incompetent. Therefore, treatment based on the location of incompetent communicating veins as determined at any one examination frequently will not correct the pathologic

condition completely. Furthermore, in obese individuals, it is next to impossible, if not impossible, to determine the location of incompetent communicating veins. In truth, it may be totally impossible to determine the course of the long or short saphenous systems either by inspection or by palpation.

Chronic ulcers of the lower leg most frequently are due to venous stasis. Unless some other etiologic factor is determined, their presence strongly indicates therapeutic measures for the relief of the stasis.

The presence of a post-phlebitic syndrome must be considered, but as was mentioned above, its presence is not a contraindication to the treatment of superficial varicosities. The subject of the post-phlebitic syndrome is much too complicated to be considered at this time. However, it is a fact that once there is a major phlebitic process of the deep veins of the extremity, that extremity never again will be perfectly normal; and probably there will be secondary superficial varicosities which may require treatment.

Pregnancy is not a contraindication to the surgical treatment of varicose veins. During pregnancy they are very common and they become more severe with each succeeding pregnancy. In the intervals between the early pregnancies, they may subside completely and cause no symptoms. But with each succeeding pregnancy they become more severe, until at times the patient may be bedridden due to the discomfort caused by the varicose veins. Surgical intervention is not undertaken during the first trimester when the uterus is most irritable, and, usually, these patients do not present themselves with this complaint until the fourth or fifth month of gestation.

Old age is no contraindication to surgical treatment, although the indications are less frequent.

The best treatment has been found to be high ligation and stripping of both the long and the short saphenous veins. Stripping of the main channel of the long saphenous vein from the groin to the ankle, of the short saphenous vein from the popliteal space to the lower calf and of any significant accessory veins of either system, is the most thorough method of removing the offending, incompetent, stasis producing veins. At the same time, the communicating veins are disrupted thus removing the necessity of trying to locate and ligate them individually, which (as was stated above) is practically impossible when the patient is obese.

The multiple ligation procedure leaves segments of veins and the communicating veins which seemed to be competent when tested. These remaining segments and communicators (if not already incompetent) frequently become incompetent causing a recurrence of the original complaints. Stripping largely obviates this possibility.

Stripping of the short saphenous vein is advocated because a significant number of patients (about 50 per cent) in whom only the long saphenous vein is removed by stripping, later return because of incomplete relief or recurrence of symptoms due to incompetence of the short saphenous vein. The procedure of ligation and stripping can be accomplished more easily than multiple ligations and is no more dangerous to patients and, as was stated above, is a much more thorough procedure. It is much more efficient and less painful than ligation with retrograde injections, and is definitely less dangerous. The technic herein described has been developed over a period of several years, during which time practically all other modern technics were tried and abandoned.

Several types of vein strippers were used, both intraluminal and extraluminal. The intraluminal stripper gives the best results. Several features of the intraluminal stripper designed by the author are worthy of note (*Fig. 1**). Four different sizes of stripping heads may be threaded on either end of a flexible cable. The cable is practically indestructible and non-kinkable by ordinary usage, or even abuse. A small bead screws on either end of the cable for introducing it through the vein. When the cable has been introduced, the appropriate sized head is attached. Stripping from above downward makes the possibility of splitting the vein at the junction of a tributary with the main vein less likely and also removes larger segments of communicating veins than is accomplished by stripping from below upward. Also, it is much easier to introduce the stripper head if it is started at the groin rather than at the ankle, and in the popliteal space than in the lower leg posteriorly.

*Storz Instrument Company, St. Louis, Missouri.

The operative technic using the stripper described above is carried out as follows: the high ligation of the long saphenous vein is accomplished just as Homans described it. Local infiltration anesthesia is used. The incision is made in the crease of the groin, centered over the sapheno-femoral juncture *(Fig. 2)*. The incision should not be carried laterally as lymphatics will be cut across, which may give rise to accumulation of lymph in the wound or perhaps the formation of a lymphocele. If extension of the wound is necessary, it should be carried medially in the crease of the groin. Adequate exposure is obtained easily through this incision. If lymph nodes are encountered, the saphenous vein almost invariably will be found more medially. When the saphenous vein has been identified definitely, it is divided and all of the tributaries to the upper end of the vein are clamped, divided and ligated individually; and if there are two, three or more tributaries entering as a single trunk these are ligated separately. The saphenous vein is ligated flush with the femoral vein with a double ligature of No. 30 cotton, one being a suture ligature. When the saphenous vein and all the tributaries to its upper end have been ligated, the intraluminal stripper is introduced into the upper end of the distal segment. In those instances where the vein is not particularly tortuous usually it can be passed downward to the ankle where the vein lies on the antero-medial surface of the tibia. Here it is exposed through a transverse inci-

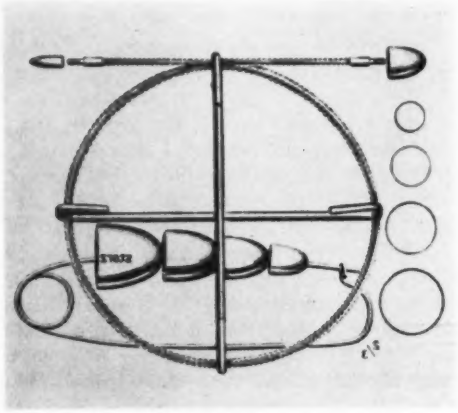

FIG. 1

Doyle intraluminal stripper.

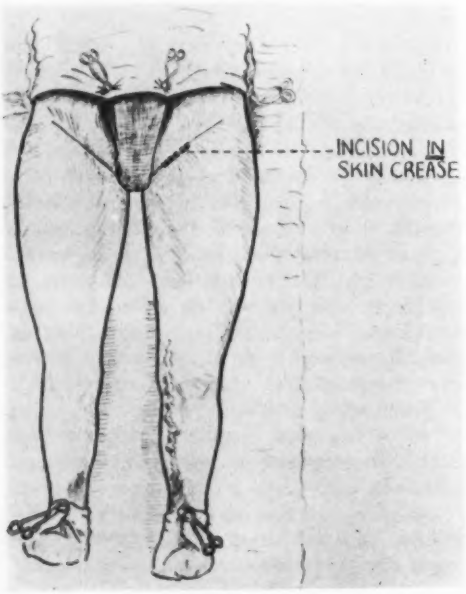

FIG. 2

Incision for high ligation of long saphenous vein.

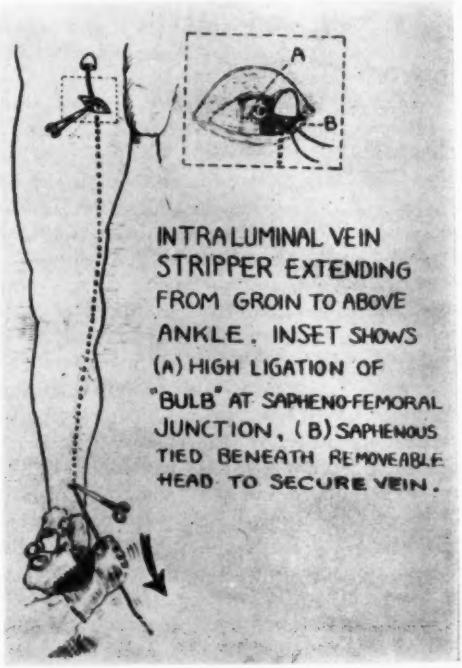

FIG. 3

Intraluminal stripper in place.

sion under local anesthesia and the stripper is delivered into the wound *(Fig. 3)*. The appropriate size of stripping head is then threaded on to the upper end of the cable, the vein tied around the cable below the head and preparations are made for the actual stripping. If the pathologic condition is bilateral, the same procedure may be carried out simultaneously on the other extremity by another team. If a single operator is doing the bilateral procedure, the same technic is carried out on the other extremity with local anesthesia for the high ligation and introduction of the stripper.

If any difficulty is encountered in introducing the stripper from above downward, no time is lost in repeated trials or trying to manipulate the stripper through the vein. The long saphenous vein is exposed through a transverse incision over the antero-medial, lower most portion of the tibia. The vein is opened and the stripper introduced. It can almost always be passed from below upward to emerge through the end of the vein in the groin wound. However, occasionally it may be impossible to introduce the stripper from either direction the complete length of the vein. In these instances, one or two additional incisions may be necessary where the stripper is caught in a sacculation or enters a tributary. However, in introducing the stripper from below upward, it is much less likely to enter a tributary since practically all of them enter the main channel from below upward at an acute angle. When the end of the cable has been brought out the groin wound from below, since the stripper head may be applied to either end of this cable, the bead which was used to introduce the stripper is removed, and the appropriate head threaded on to the end of the cable at the groin.

When this has been accomplished on one or both extremities, the patient is placed in moderate Trendelenburg position, gas anesthesia is administered, and when satisfactory anesthesia is obtained, the stripping heads are drawn through from above downward, removing the long saphenous veins. Occasionally, in drawing the stripper through, marked resistance may be met at the point of entrance of a large tributary and if undue force seems to be necessary to bring the stripper head past this point, an additional incision is made and this tributary is ligated independently. This occurs infrequently. Sometimes considerable force is required to pull the stripper through, and although large tributaries are frequently avulsed, there have been no instances of bleeding which required any special measures. Compression over the tracts from which the vein has been stripped is made temporarily and the patient is allowed to wake up while the wounds at the groin and at the ankle and any additional wounds are closed with interrupted cotton sutures under local anesthesia (usually the original infiltration).

When these wounds have been closed, the patient is turned on the abdomen and the short saphenous vein is exposed through a transverse incision about three-quarters of an inch below the popliteal crease just deep to the popliteal fascia in the "V" formed by the heads of the gastrocnemius muscle *(Fig. 4)*. If the vein is of sufficient size so that the stripper can be introduced, it is passed downward to the level of the upper portion of the Achilles tendon. Here the vein lies just lateral to the tendon along with the sural nerve, and if the stripper cannot be passed

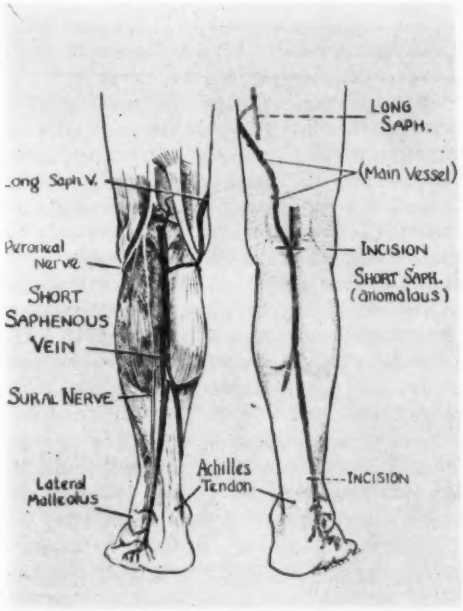

FIG. 4

Left: Normal short saphenous vein. Right: Anomalous short saphenous vein passing medially around thigh and emptying into long saphenous vein.

from above the vein may be exposed below and the stripper introduced from below upward. The upper segment of the vein is ligated high in the popliteal space. The patient is anesthetized again for a few minutes and the stripper pulled through removing the diseased veins from above downward. These wounds are closed with interrupted cotton and dressings are applied to all wounds. Elastic bandages are applied from the base of the toes up to the knee. A three-inch, rubber reinforced bandage is used for this area. A four-inch, rubber reinforced bandage is applied from the groin downward to meet and overlap the lower bandage. It has been found that the elastic bandage applied to the thigh from above downward retains its position better than if the bandage is applied from below upward. It is not necessary or desirable to use adhesive elastic bandages.

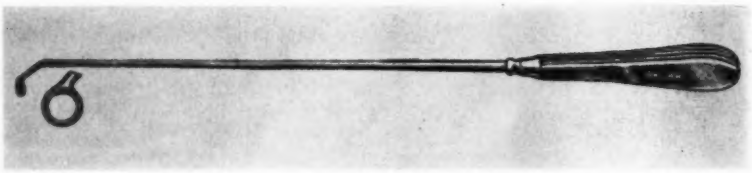

FIG. 5

Mayo extraluminal stripper.

The question always arises as to whether or not stripping should be attempted when ulcers are present. Where there are ulcers, the preoperative preparation includes a day or so of moist dressings and an antibiotic, usually penicillin, given before and after the operation. Very frequently the stripper can be passed from above downward, coursing beneath the ulcer, and it is then brought out through an incision below the ulcer even on the dorsum of the foot if necessary. It is desirable that the stripping be accomplished to a point below the ulcer if at all possible. However, sometimes it is impossible to introduce the stripper beneath the ulcerated area because of scarring and obliteration of the vein in this area. If the stripper cannot be introduced from above downward, if possible the vein is exposed below the ulcer, and the stripper introduced here. The rapidity with which ulcers heal when the stasis has been relieved is remarkable. In fact, if the ulcers do not improve in appearance or fail to heal rather promptly, accessory veins maintaining the stasis must be suspected.

Occasionally, segments of the vein will have been involved in a phlebitic process, frequently due to previous injection of sclerosing solutions, making it impossible to use the intraluminal stripper. These recanalized, previously thrombosed veins must be removed as they frequently cause stasis just as do incompetent veins which have not been involved in a phlebitic process. The intraluminal stripper cannot be introduced through these veins. Therefore, the extraluminal, Mayo type, stripper *(Fig. 5)* is the best instrument for removing them.

Because ordinarily there have been only short periods of general anesthesia, the patient is thoroughly awake and cooperative when returned to the room. He is encouraged to move the extremities; and, as soon as possible, he is gotten up to walk five minutes every hour during the day of the operation. It is possible in most instances; if not, active exercises of the extremities are carried out at frequent intervals. The patient is gotten up and walked for five or ten minutes during the middle of the first night following the operative procedure. The walking and active exercises are considered important to prevent stasis and possibly thrombosis of the deep veins. Although this complication has never occurred in the author's series of several hundred cases, it is deemed to be an important postoperative prophylactic measure.

Postoperatively these patients wear some elastic support to the leg for two or three weeks. In the more severe cases, it may be necessary subsequently to obliterate very superficial sacculations for cosmetic reasons. Later, accessory veins of either the long or short systems may become incompetent requiring simple local ligation or obliterative therapy.

CONCLUSIONS

(1) The evaluation of the condition of the superficial veins of the lower extremity can

be quickly accomplished by a single test, the Trendelenburg.

(2) High ligation and stripping of both the long and short saphenous veins is the treatment of choice.

(3) A new intraluminal stripper facilitates the accomplishment of this procedure.

(4) The employment of local anesthesia for the exposure and ligation of the veins and for introducing the stripper makes it possible to accomplish this procedure with only short periods of general anesthesia.

GRANULOMA GANGRAENESCENS*

REPORT OF A CASE

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Under the name of granuloma gangraenescens, otorhinolaryngologists have reported a number of cases of a chronic granulomatous condition of the face, affecting especially the nose but spreading to the palate, the bones of the facial skeleton, upper maxillae, malars, nasals and even to the base of the skull, causing large gangrenous ulcers, frightful destruction of the soft and bony structures and ending in death in the course of a few months to a few years. The condition progresses fatally in most cases although temporary improvement may be obtained. The final picture is that of loss of all the midface, with necrosis, profuse suppuration and the formation of a large cavity, bound below by the lower jaw, which is never affected, and above by the frontal bone and upper part of the orbits. The mouth, the nose, and the eyes are often entirely destroyed by the necrotic process.

This tremendous facial destruction ending in death has been attributed to streptococcal infection and to other bacterial infections, to viruses, syphilis, leprosy, malignancy and to granulomatous growths of unknown etiology. A similar condition has been reported in some tropical regions and considered a complication of yaws, under the name of gangosa.

Granuloma gangraenescens begins in the form of a chronic nasal discharge, mucoid at first and later purulent and foul, with the formation of necrotic ulcerations in the nasal septum, the skin of the alae nasi and at times of the mucous membrane of the palate. Sometimes this lesion appears first in the center of the palate in the form of a round ulcer with a necrotic center, affecting the mucous membrane and the subjacent bone. This preliminary stage may last for weeks or months with temporary improvement, but sooner or later the condition spreads and forms necrotic areas elsewhere in the vicinity of the initial lesions or the condition spreads to the upper jaw, opening the maxillary sinuses and creating foci of suppuration which spread gradually to the rest of the soft and bony structures of the face. Chronic edema distorts the features and a granulomatous growth may be observed underneath, partly necrotic. The lymph nodes are not enlarged.

The first case reported in the literature seems to have been that of McBride[1] in 1897 under the title, "Case of Rapid Destruction of the Nose and Face," and since then more than 100 cases have been reported, most of them in the otorhinolaryngological publications. Only a few reports have been found by us in the dermatologic literature and the condition is not mentioned in most of the dermatologic textbooks consulted by us. It is not mentioned in the "Nouvelle Pratique Dermatologique"[2] and no reference has been found to this entity in "The Year Book of Dermatology and Syphilology" from 1924 to 1951. The first dermatologic report was apparently that of Fordyce[3] in 1906. Falchi[4] in 1927 in Italy reported a case. Chatelier[5] in 1927 published another case in France, "Sarco-Lupus Pernio, Mutilating and Mortal." Charles Dennie[11] of Kansas City contributed a case in 1940 of "Massive Destruction of the Face." The condition is not mentioned in the German "Handbuch der Haut and Geschlechtskrankheiten"[7] nor in the proceedings of the "Reunion Dermatologique de Strasbourg"[9] devoted to the study of the granulomas, in 1937. Three illustrations are included in the "Corpus Ikonum Morborum

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*Read in Section on Dermatology and Syphilology, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

*From the Department of Dermatology and Syphilology, University Hospital Calixto Garcia, University of Havana School of Medicine, and the Department of Pathology, Havana Municipal Hospital, Havana, Cuba.

Cutaneorum"[10] published by the International Dermatological Congress of Budapest in 1937 and mention and illustrations are also found in Simons' "Handbook of Tropical Dermatology."[22]

Reports from otorhinolaryngologists have been quite frequent in the last few years, the outstanding publications being those of Hoover,[12] Berqvist and Koch,[13] William, [14 16] Pirodda and Guenzi,[15] McCart,[17] Piquet and Tupin,[18] Moore, Beard, Thoburn and Williams[19] and Moulonget,[21] the latter, the latest report available in 1952.

The condition has been reported under a number of different names but granuloma gangraenescens, first used by Derischanoff[6] seems to be widely accepted. In America there is a tendency among otorhinolaryngologists to use the terms, idiopathic granuloma of the midline tissues of the face and also malignant granuloma of the nose and granulomatous ulcer of the nose.

The etiology remains unknown. Bacteriologic investigations have failed to demonstrate a specific organism; streptococci, staphylococci, Pseudomonas aeruginosa and other common microorganisms are usually encountered but they appear to be contaminants. No fungi have been demonstrated. The pathologic reports point to a chronic granulomatous process without specific features. Syphilis, yaws, leprosy, leishmaniasis, blastomycosis, coccidioidomycosis and malignant tumor have been considered and eliminated in the differential diagnosis. Other malignant conditions such as sarcoma, mycosis fungoides, lymphoblastoma, have also been ruled out.

Treatment remains without effect. Antibiotics and sulfa drugs have failed, antisyphilitic treatment has been used without improvement, cortisone has been tried with some encouraging results and radium and roentgen ray therapy have caused temporary reabsorption of infiltrations and healing of the ulcers.

REVIEW OF THE LITERATURE

Derischanoff,[6] who seems to have been the first to use the name granuloma gangraenescens, reports the case of a woman aged 62 who died after 18 months of illness. The histologic studies showed a granuloma with giant cells, lymphoid cells, myeloid cells and plasma cells, with a sarcomatous aspect. There were no metastases.

Chatelier's[5] case seems to be a granuloma gangraenescens coincident with lupus pernio of the nose, the conditions being probably non-related. The patient died with typical necrosis of the skeletal and cutaneous parts of the mid-face after 11 months of illness.

Tischenko and Kroitschick[8] believe that the condition was reported by Kraus in 1929 in 3 patients of Kreibich clinic, but they give no bibliographic data; they refer to similar cases reported by Volk and others in 1933. No etiologic agent could be demonstrated in these cases, although the consensus was in favor of an infectious agent. Tischenko and Kroitschick report a case of their own in an Ukrainian male peasant aged 37, beginning in the form of an ulcer of the nose and upper lip which the patient attributed to trauma caused by a horse. Treatment for syphilis was ineffectual, the patient dying after 4 months of illness. The pathologist reported chronic inflammatory tissues without special characteristics.

Wood's[2] case seems to be one of the earliest in the English literature. This Dublin physician reported a case of this affection in a man aged 58 who suffered from it for 5 years (1913-1918). Roentgen rays were used without improvement. Another patient, a man aged 67 with a granulomatous growth and necrosis of the face, was greatly improved by radium treatment and was still alive one year after treatment.

Dennie[11] in 1940 reported a case in a man, a native of Kansas, 28 years old, beginning with nasal discharge, sinusitis and perforation of the septum, bilateral dacryocystitis, necrosis of the nose, invasion of the upper lip, ending in complete destruction of the nose, of the skeletal and soft parts of the face, to the extent that the movements of the esophagus could be observed. The autopsy revealed phagedenic granuloma of the face, necrotizing cellulitis of the face and head, chronic abscess of the brain, pachymeningitis, confluent pneumonia and abscess of the right lung and parenchymatous degeneration of the liver and kidneys. Histopathologic studies did not allow a definite diagnosis, although they were negative for syphilis and malignancy. Spirochaeta microdentium was isolated from the diseased tissues and Dennie suggested that this organism might have been the etiologic agent, but this could not be proved.

Hoover's[12] paper offers a complete review of the literature until 1941. Hoover's first case was that of a man aged 51 whose condition began with swelling of the right side of the nose and face, high fever and stuffiness of the nose. The patient died after 11 months of illness. The second case was that of a man aged 35 with a swelling of the right side of the face of 7 months duration, thin nasal discharge, foul breath and loss of weight of 25 pounds; there was an area of reddened, tender skin on the face and an ulceration with a draining fistula. The nasal septum was destroyed and the nasal chambers covered with pus and heavy foul crusts. The Wassermann test was negative; there was no leukocytosis and only slight anemia. Bacteriologic studies were negative, only common germs being cultivated. The patient died in 3 months. Another case reported by Hoover was in a man aged 57, with nasal ulcer and obstruction of the nose. There was a history of a granuloma of the nose 23 years before which healed under treatment with tuberculin. About 9 months before the patient came under Hoover's care, he had a nasal discharge and

fever of 102° F. The lesions progressed and the patient developed swelling and redness of the nose with edema of the left lower eyelid. Bacteriologic and serologic returns were negative. Pathologic studies showed only non-specific granulomatous tissue. Roentgen ray treatment caused temporary improvement. Finally there was considerable necrosis and ulceration of the left side of the nose with much edema of the left side of the face. Still another case of Hoover's was that of a man aged 36 with nasal discharge, stuffiness of the nose with crust formation, destruction of the turbinates, ulceration of the hard palate with perforation into the mouth, swelling and tenderness of the right cheek, fistula of the lacrimal sac, granulomatous and necrotic ulcers of the cheek and nose and eschar formation showing at the bottom the necrotic maxillary bones. The hard palate was entirely destroyed and many teeth were missing. The necrosis extended to the orbit, nose and oral cavity and to the left cheek. The patient had high fever, was emaciated and died 9 months after the beginning of the condition, a year and a half after the original discharge. No cause could be found. In another case of Hoover's the initial lesions were electrocoagulated and the patient was living and well at the time of publication. Hoover lists the following as the important differential diagnoses: syphilis, tuberculosis, malignancy, noma, fungous infections, agranulocytosis, glanders, anthrax, myasis, yaws, diabetic gangrene, leishmaniasis, and postencephalic tropic ulcer.

Berqvist and Koch[13] of Sweden report 2 cases of this condition, both in men, one aged 39 and the other 27. The first patient suffered first the usual nasal discharge and sinusitis, culminating in a necrotic ulcer of the nose, followed by another ulcer of the palate and edema of the face and eyelids. The condition progressed until the face was destroyed, resulting in a deep pit in which the tongue and lower jaw were apparently intact. The patient died one year after he became sick. The postmortem showed necrosis of the soft tissues and skeletal parts of the face, purulent meningitis and abscess of the frontal lobe of the brain, purulent bronchitis and focal bilateral pneumonia. The histopathologic examination showed chronic inflammation with lymphocytic infiltration, no sign of specificity and no tumoral growth. The second case started with an unsuspected small mass in the left lung observed during a miniature x-ray survey; two weeks later there was obstruction of the nostrils and lacrimation on the left eye and pain on the right side of the nose and upper teeth. The patient was hospitalized after developing an ulcer of the hard palate and a tender, reddened area of skin of the ala of the nose. All laboratory examinations failed to throw any light on the cause of the condition. The x-ray of the left lung showed several areas of infiltration not characteristic of any specific pathologic picture. Necrosis of the nose and upper lip followed after a month, with high fever. Biopsy showed an inflammatory non-specific process with necrosis. Streptomycin, other antibiotics and blood transfusions were given without the least influence on the course of the condition. Roentgen ray treatment was then started at the rate of 500 r. daily to a total dose of 4000 r. in 11 days. Improvement started almost immediately; the process stopped spreading, the fever subsided, the ulcerative process was checked and healthy granulation tissue appeared. After a week the patient grew gradually worse but the lesions of the face remained stationary, while numerous nodules appeared all over the body, which were considered metastases from the lung lesions; the latter spread rapidly and roentgen rays failed to check the progress of these lesions. The patient died 2 months after hospitalization. Histopathologic examination revealed an infiltration of reticular cells of the stellate type, of marked polymorphism and numerous mytotic figures; there was a network of coarse collagenous fibers and of fine reticular fibers. This case is clearly a tumor and is unique in the presence of metastases. The authors conclude that granuloma gangraenescens is a malignant growth (sarcoma or lymphogranuloma) and that early irradiation should be employed.

Williams[14] of the Mayo Clinic writes one of the best and most complete contributions to this subject and discusses at length the possible etiologic factors, especially those concerning tissue immunity. He believes that the condition is a granuloma, primarily vascular and perivascular, of allergic nature and related to rheumatic fever, periarteritis nodosa and lupus erythematosus. In other words, it is an idiopathic granulomatous process due to bacterial allergic phenomena in the vascular system, causing inflammation and necrosis as a result of vascular stoppage. Williams reports 3 cases, one of them in a woman aged 48 and 2 in men 45 and 21 respectively. All patients died. In the last mentioned case the diagnosis of periarteritis nodosa was reported by the pathologist.

In another more recent paper, Williams and Hochfilzer[16] report on the effects of cortisone in another patient suffering from the same condition. Cortisone was used on the assumption of the allergic nature of the condition and the presence of arteriolar spasm, dilatation of the capillaries and venules, periarteritis nodosa, necrotizing arteritis, granulomatous formation and symptoms reminiscent of lupus erythematosus. Cortisone proved helpful, although the condition did not heal and the general health of the patient deteriorated. The patient was still alive at the time of publication.

Piquet and Tupin[18] of Lille, France, refer in 1951 a total of 7 cases in Germany from 1937 to 1945, 12 cases in Great Britain, 2 in Denmark, 2 in Sweden, 1 in France, 1 in Italy, 1 in the Ukraine, 1 in Switzerland, and 3 in America, but this summary is probably short of the true number of cases reported.

Piquet and Tupin divide the evolution of granuloma gangraenescens into three stages: (1) rhinitis with crust formation and purulent discharge, (2) swelling, edema and erythema of the face with pain, beginning on the nose, cheeks and eyelids, with deep infiltration of the affected parts, and (3) necrosis with black to brown discoloration, sanguineous discharge and ulceration, progressing to the skeletal parts and to the pharynx, resulting in mutilating ulcers and death. Differential histopathologic diagnosis should be made according to these authors, from sarcoma, reticulosarcoma, granuloma fungoides and reticulo-endothelioma. The patient reported by Piquet and Tupin was a man aged 43 with the typical picture described

above. Treatment consisted of streptomycin injections, mercury cyanide injections, and local antisepsis. The pathologic examination showed acute inflammation with vasculitis; there were no signs of syphilis, tuberculosis or of tumor growth. The patient died after 2 months of sudden hemorrhage.

Moore and collaborators[19] of Rochester, Minnesota, in reporting a new case in 1951, offer a differential diagnosis from oidiomycosis, glanders, tularemia, leprosy, rhinoscleroma, blastomycosis, sporotrichosis, and leishmaniasis. They believe that the evidence so far presented seems conclusive that this condition, called by them idiopathic lethal granuloma of the midline facial tissues, is the result of localized hyperimmunity with an Arthus-like reaction of the involved tissues. The case reported by these authors was that of a woman aged 50 with the typical picture of necrosis of the face, at the same time showing rheumatoid arthritis of knees and ankles and disseminated lesions of the skin resembling lupus erythematosus. Cortisone and ACTH were employed with encouraging results and at the time of publication the patient was still alive. The pathologic diagnosis was contradictory, since some pathologists made the diagnosis of "necrotizing granulomatous dermatitis" while others examining the same tissue sections thought them to show a "grade I hemangio-endothelioma, representing a Kaposi tumor." These were biopsies of papular growths of the skin of the upper extremities, while the sections of the facial lesions showed "granulomatous infiltration with giant cells and numerous eosinophils."

Moulonget and Letellier[21] of Paris in reporting a case of this condition in a woman aged 58, describe their histopathologic findings as chronic inflammation, edema of the epidermis, proliferation of the conjunctival tissue rich in blood vessels, a thick infiltrate of inflammatory cells, that is, lymphocytes, plasmocytes, Roussell bodies, the location of the infiltrate being predominantly perivascular. A tumor filling both nasal fossae was removed surgically and the pathologic diagnosis was chronic granulomatous inflammation with the addition of many polynucleated cells and many mitoses. The patient was still alive at the time of reporting. These authors seem to join Williams, Moore and their collaborators in the interpretation of these lesions as allergic phenomena of the Arthus type of reaction, causing vascular spasm or local allergy in the tissues, so rapid and intense that it results in necrosis; or perhaps humoral allergy with the rapid and intense formation of antibodies and their union or clash with the antigens, causing tissue destruction. Physical allergy, tissue allergy and humoral allergy may be associated in the production of these malignant granulomas of the face. Perhaps hypophysis and suprarenal glands may intervene in the process.

Simons,[22] a dermatologist of Amsterdam, mentions the existence of this entity and makes the differential diagnosis from noma and from mycosis fungoides. Noma, he recalls, is always consecutive to an infectious disease such as smallpox, measles, scarlet fever, diphtheria and is common in children and rare in adults. It affects the tissues of the cheeks and mouth but not the nose and rarely the skeleton. Differential diagnosis from syphilis is important since gummatous lesions of the nose and mouth may be ulcerous and gangrenous from the beginning.

This review of the literature is not complete, but covers the most salient features and most of the reported cases.

REPORT OF A CASE

M.G.L., a white Cuban man, aged 42, entered the Dermatological Service of the University Hospital in Havana, May 24, 1951, suffering from a necrotic ulcer of the base of the nose on the left side. This ulcer was about 2 cm. in diameter and was covered with a black eschar *(Fig. 1)*. The edges were somewhat reddened, oozing seropurulent fluid and giving the impression of broken down vesicles. The patient was in apparent good health although there was a slight elevation of temperature. The patient, who was an assistant chemist in a sugar mill, denied tuberculosis and venereal diseases. His wife was in good health and had 4 children all living and well. According to the patient, in September 1950 he noticed for the first time that his breath was foul and in November of the same year there was some nasal discharge. He then consulted an otorhinolaryngologist who treated him for an ulcer of the left side of the nasal cavity. The bacteriologic examination of the discharge showed Staphylococcus aureus. Roentgen ray examination showed lack of transparency of the left maxillary sinus. Serologic tests for syphilis were negative. He was given 20 injections of bismuth subsalicylate at that time without improvement; the patient says he had a slight swelling of the skin of the left side of the nose and some tenderness on pressure. In January 1951 the cutaneous inflammation increased and the nasal fetor was very marked. The patient's local physicians treated him with repeated injections of penicillin without improvement, with a total dose of 9 million units of this antibiotic. The nasal fetor improved but returned in full force after the penicillin injections were stopped. In April 1951 redness ap-

FIG. 1

Granuloma gangraenescens, initial cutaneous lesion with necrotic center and edematous border.

peared on the skin of the nose, pain was felt for the first time and there was a slight discharge followed by breaking down of the skin and the formation of a necrotic eschar covering a shallow ulceration. There was edema and erythema of the left side of the face. The nose specialist reported that the internal ulcer was healed and there was only a slight inflammation of the mucous membrane with a mucopurulent discharge.

The diagnosis of malignant pustule was tentatively made and bacteriologic examination carried out accordingly, but no Bacillus antracis was found. The cultures showed Staphylococcus aureus and albus, Pseudomonas aeruginosa and a few yeast cells. Blood cultures and inoculation of guinea pigs, mice and rabbits were negative. Physical examination was essentially negative and no visceral symptoms could be elicited. Roentgen ray examination of the chest was negative for tumor and for tuberculosis. Serologic tests for syphilis were negative, repeated blood counts showed only moderate leukocytosis of about 12,000 and 6 to 12 per cent eosinophils. Erythrosedimentation rate was 34 in one hour. Roentgen ray of the skull showed partial destruction of the left nasal bone. A biopsy of the cutaneous ulcer was reported with the diagnosis of "chronic inflammation and necrosis, foci of perivascular inflammation consisting of lymphocytes and polynuclears."

No diagnosis was made at that time. The patient was given 9 million units of penicillin and 32 grams of dihydrostreptomycin without improvement, on the contrary the ulcer of the skin increased in size reaching a diameter of about 4 cm. with the black eschar increasing in the same proportion. A vaccine was prepared with the germs recovered in the cultures and given intradermally and subcutaneously for the next 2 months, with doubtful benefit and without much local or general reaction. The patient's general health remained good, his appetite was fair and he left the hospital in good general condition on August 25, 1951. The last few weeks of his stay he had been taking 3 grams of sulfa drugs daily.

On October 12, 1951, the patient re-entered the Dermatological Service. The cutaneous ulcer was healing spontaneously, the eschar had fallen off and

FIG. 2

Necrotic tumor-like growth of the gingivo-jugal sulcus, affecting the maxillary bone. Massive edema of the left side of the face.

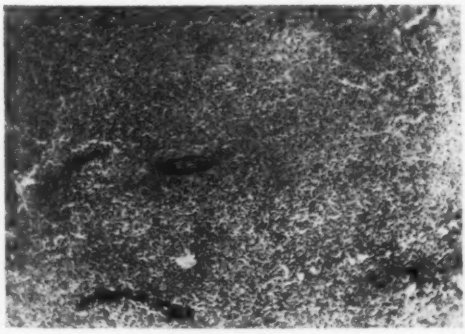

FIG. 3

Chronic inflammation with thrombotic vessel. Thrombosis is a main feature of the histopathologic picture.

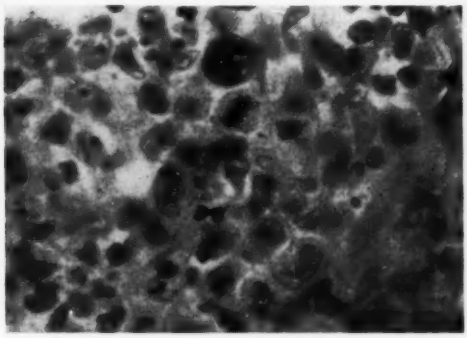

FIG. 4

Detail of the cellular infiltrate showing multinucleated cell, mitosis, histiocites, polynuclears and cellular debris.

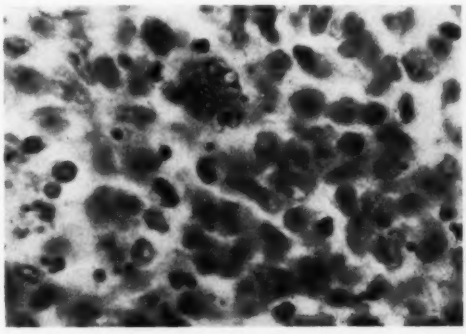

FIG. 5

Detail showing clumping of cells, resembling polynucleated cell, and polymorphous cellular infiltrate.

there was a partial scar, rather depressed but firm and thick and white in color. The patient came back because a new ulcer had appeared in the roof of his mouth. On examination there was in the middle of the hard palate a punched out ulcer about 1.5 cm. in diameter, slightly oval in shape, in the center of which the bone showed dark and necrotic; the edges of this ulcer were pale and had no tendency to heal. The patient said that this ulcer had developed quite suddenly and without much pain. Vaccine treatment was reinstituted and the patient seemed to improve, his general health remaining in good shape. Terramycin was administered at the rate of 1 gram daily for 14 days without any effect on the local condition. The patient went home again on January 12, 1952, after completing his course of vaccine, the palatal ulcer unchanged but not growing.

On February 13, 1952, the patient again entered the hospital suffering from a new ulceration and inflammation with necrosis in a small area situated in the gingivo-jugal sulcus of the right side, surmounting an infiltration about the size of a hazel nut, hard and painful to the touch. This nodule discharged pus for about 15 days and slowly regressed. Almost immediately two new lesions appeared, one on the left lower eyelid, corresponding to the site of the lacrimal sac, causing a fistula to develop, discharging thin pus and later turbid tear fluid; there was considerable swelling of the lid and adjacent parts of the face. Almost at the same time a large rapidly growing swelling of the left cheek was observed and a large mass, grayish white in color was observed occupying the gingivo-jugal sulcus on the left side and apparently extending upward to the upper maxillary bone. Roentgen ray examination showed a shadow occupying the lateral part of the face and obscuring the maxillary bone and the antrum. This mass was hard and painful to pressure and spontaneously, preventing rest and sleep; the patient was restless, would not eat, his temperature rose to 102-103° F. and he rapidly deteriorated. Intravenous infusions of amino acids in dextrose solution were administered daily; a new trial with diamino-diphenyl-sulphone failed to cause improvement and it was then decided to use roentgen ray treatment on the large tumor, beginning with 600 r. every other day. Treatment began on March 7, 1952, and continued until a total dose of 3000 r. were given. On April 2, the patient felt much better, the tumor was gradually receding, pain was almost gone and the patient slept and was able to eat solid food. By April 14, 1952, the mass on the cheek was gone and there remained only a slight post-treatment erythema and pigmentation on the skin of the face. The abscess of the left lacrimal sac continued active and discharge was fluid and abundant but there was only slight inflammation accompanied by swelling and pain from time to time when drainage was not free. It must be remarked that at no time were the lymph nodes palpable.

The patient was seen for the last time on October 15, 1952. The ulcer of the hard palate was in the same condition, the necrotic bone still unchanged but apparently inactive. The lesion of the mucosa of the gum and cheek, right side, reduced to a necrotic area, the size of a lentil; the lacrimal sac still draining and slightly inflammed; the lesion of the left maxilla and cheek was apparently gone without leaving a trace, although roentgen ray examination was not done.

A biopsy made on the edge of the necrotic area of the early nose lesion showed necrotic epithelium with hydropic epithelial cells and unrecognizable cellular debris in the corium. There were many thrombotic vessels and areas of polynuclear infiltration.

A biopsy was made of the partially necrotic tumoral lesion on the left gingivo-jugal sulcus. The epithelial layers showed edema and spongiosis with vesicle formation; the majority of the vesicles were filled with transparent albuminous fluid, but others were filled with leukocytes, desquamating epithelial cells and other cellular debris. Exocytosis was quite marked in the interpapillary processes. In the corium there were two types of lesions, one zone was made up of necrotic tissue with cellular remains and nuclear dust, as well as many cells undergoing necrosis without clear cytologic characteristics. In this zone all blood vessels were thrombotic and the vessel walls showed fibrinoid degeneration. The other zone was non-necrotic and it showed a dense and diffuse cellular infiltrate. Among these cells there were many different types: spherical, fusiform, giant multinucleated cells, with structural neoplastic architecture. Their nuclei were very large in relation to the size of the cells, they showed vesicular vacuoles, others had compact chromatin accumulations and still others were polylobulated. In all these cells the nucleoli were prominent, spherical or in the shape of a club. There were numerous mitotic cells. Others showed multi or polylobular nuclei resembling the Reed-Sternberg cells. Mixed with these cells there were lymphocytes, neutrophilic polynuclears and a few plasmocytes. In both zones the vessels showed fibrinoid degeneration of the vessel walls and most vessels were thrombosed. The widespread necrosis was easily understood after observing the arterial thromboses. The cellular infiltrate as a whole resembled that of granuloma fungoides, sarcomatous Hodgkin's disease or a sarcoma of polymorphous cells; in some places the arterial lesions duplicated those typical of periarteritis nodosa, but the rest of the histopathologic lesions were not compatible with this diagnosis.

SUMMARY

The purpose of this paper is to bring to the attention of dermatologists a condition that has been known to otorhinolaryngologists for a long time, that affects the skin and mucous membranes and bones of the face, that often shows the most pronounced initial symptoms on the skin and that dermatologists should be able to recognize and diagnose correctly. A number of reports in the dermatologic literature are analyzed as well as reports from otorhinolaryngological sources.

Differential diagnosis is considered with a

number of similar syndromes caused by other diseases.

The condition begins in the form of necrotic ulcers in the skin and mucous membranes of the nose, in the mouth as similar ulcers or granulomatous tumor-like growths; the lesions spread to the skeleton of the face causing destructive osteomyelitis and ending in the destruction of the entire center of the face and in death. The final stage is one of frightful necrotic destruction of the mouth, nose, eyes and upper jaws with a resulting cavity in which the tongue and esophagus remain usually unaffected. The disease runs its course in a few months to a few years. A few cases have been reported in which the process has been arrested by means of radium or roentgen ray therapy.

The cause remains unknown. According to some authors the condition is caused by an Arthus-like phenomenon, due to tissues hyperallergic to common germs such as streptococci and staphylococci. To others including ourselves, the condition is a granulomatous inflammation similar to granuloma fungoides and to certain lymphoblastomas. Still others see a certain relation between this condition and the collagenous diseases, especially periarteritis nodosa.

A case of this condition is reported in a white man aged 42 with ulcerating necrotic lesions of the nose and mucous membrane of the mouth and granulomatous growth of the left cheek and gum and the maxillary bone of the same side. The condition was arrested by roentgen ray treatment but there were still active lesions at the time the patient was seen last, one month ago.

Bacteriologic studies failed to show any special organism. Treatment with all the antibiotics failed, as well as with sulfonamides and diamino-diphenyl-sulphone. An autogenous vaccine administered for a long time seemed to have beneficial action but this is difficult to evaluate.

We wish to thank Dr. José C. Gros of the Oto-rhino-laryngological Service of the University Hospital for his helpful suggestions and for providing bibliographic data.

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THORIUM-X IN DERMATOLOGY*

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Thorium-X as a radioactive isotope has a definite place in the therapeutic armamentarium of the dermatologist. However, in spite of repeated asseverations of complete safety, it is necessary to use it subject to the same restrictions, knowledge and training required for the use of x-ray and radium. In some instances it can serve where no other medium is quite satisfactory. Moderate reactions and permanent damage are possible in the use of any radioactive material and thorium-X is no exception. Even long continued ultraviolet light in the form of natural sunlight can in the course of a long outdoor lifetime lead to the weatherbeaten kera-

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totic skin of farmers and sailors with a tendency to malignant degeneration.

The advantages of thorium-X are its relative inexpensiveness, the fact that its radiation is 91.4 per cent alpha rays, and 99 per cent of energy absorbed is due to alpha rays. It is therefore absorbed in the outer layers of the skin and in the epidermis closely adjoining the hair follicles. It is easy to apply by simply painting it on the lesions or rubbing in the ointment; and it is relatively safe because of these attributes. The conventional x-ray machine can be throttled down to low kilovoltages and a soft ray obtained but only at the expense of an outrageous increase in the time required to obtain the dosage desired, since the output is reduced. The new beryllium window tubes obviate most of these disadvantages but still carry a fair proportion of harder electron emanations. Grenz ray machines require a rather large outlay primarily for equipment and provide a relatively large percentage of harder rays. All of the x-ray outputs still contain a fairly large component of beta rays and gamma rays. Radium can be used in unfiltered plaques but here again one must take the beta and gamma rays with the alphas. With thorium-X one can almost have the cake and eat it too, if one desires only an easily applied soft superficial alpha radiation.

The same advantages may also be disadvantages. Already the dreaded question has been asked by several patients, "Doctor, why can I not buy the stuff myself and put it on at home?" A similar danger may also lie in the indiscriminate use of the material by physicians who have not troubled themselves sufficiently to learn how to use radioactive materials properly. Undoubtedly, the material will be employed in many cases on highly irritated skins where its use will only add fuel to the fire and aggravate the dermatitis. It will undoubtedly also be used in many cases where alpha rays are useless and heavier irradiation is imperative, as in the case of carcinoma of the skin. In climates where there is a great deal of sunlight and exposure to it, the use of this material may lead to sufficient photosensitization and pigmentation to damage the skin. An instance of this is illustrated by the application of a small test dose of thorium-X in alcohol on the author's forearm in April and the fading away of the pigmentation in several weeks, only to be followed by definite hyperpigmentation of the same area exposed to the intensive light of the June sun, several months later.

PHYSICAL CHARACTERISTICS OF THORIUM-X

Thorium-X is a natural radioactive isotope of radium emitting alpha rays and has a half life of 3.65 days. The alpha particle is a swiftly moving, doubly charged particle of helium with intense ionizing powers. Alpha particles penetrate tissue to a depth of 70 microns and may be stopped almost completely by a thin sheet of cardboard but studies by Lomholt[1] showed diffusion into tissues of 70 microns depth, and recent work by Witten *et alii*[2] has shown activity in sweat glands as deep as 1.8 mm. below the surface. This penetration is largely down the follicles and sweat ducts and is not diffused through the tissue. Practically all of the activity is concentrated in the first 80 microns or 0.08 mm. depth and scattered radiation deeper has little biological effect. Even scales on the skin are sufficient to protect underlying skin from much of the radiation effect. Faint erythema appears in twenty-four hours and may result from as small a concentration as 40 microcuries (250 esu). This is often followed by pigmentation which slowly disappears in several weeks' time but may be reactivated later by intense ultraviolet irradiation.

The material used in this study was made up into alcohol solution containing 150 microcuries per cc. and was diluted with one to three parts of isopropyl alcohol for working solutions when used widely over the body, as in extensive psoriasis. Where practical, the applications of several coats of the material were allowed to dry and then covered with flexible collodion for twenty-four hours or longer. The ointment was used in strength of 75 microcuries per gram and was applied for twenty-four hour periods. The ointment was also used on mucous membranes and other sensitive inflamed areas but for a much shorter length of time. At the end of the prescribed periods, the patient was instructed to remove the application. Under no circumstances were the patients allowed to make their own applications.

DISCUSSION OF CASES

Some two hundred and fifty patients were treated during the five-year period, most of them in the past two years. Twenty-five of these cases were discarded because of incompleteness.

In many cases the thorium-X was used more or less as an adjunct in the same way that x-ray is usually used in dermatology, other local therapy and removal of etiological causes proceeding in the accepted manner.

Alopecia Areata.—One case is reported but several were treated. No apparent results were obtained. Witten's work points to absorption in the hair follicles so further studies might be worth while and more extended trials may be made.

Angiomas.—Cavernous hemangiomas were not treated. All of the angiomas in this series were of the hypertrophic strawberry type. Surface redness responded well and rapidly to the thorium-X applications but depth treatment was better accomplished by radium and x-ray. It was found that the alpha irradiation made an excellent method for "trimming" the islands and edges left over after deeper therapy. It yielded much superior results to carbon dioxide snow and produced less scarring.

Cheilitis.—This is a good superficial method of therapy for the very thin keratosis and for herpes and superficial inflammatory changes and leukoplakia. Here the way is narrow and dangerous. One must know the depth of the lesion and avoid trying to treat any lesion of demonstrable thickness. Also one must not brutally beat down a mucous membrane in a young man leading an outdoor life with much actinic exposure in his future.

Fungous Infections.—In general, fungous infections of the feet, hands, glabrous skin of

Diagnosis	No. Cases	No. of Rx	Dose	Duration Hours	Results Good	Mod.	Poor	Adverse Reactions
All cases	225	3- 6	75 mc.	24	137	49	39	Various
Alopecia areata	1	5	75 mc.	24			1	None
Angioma hypertrophic	11	8	150 mc.	24	11			Excessive tanning 2 cases
Atopic dermatitis thighs/hands	2	3	75 mc.	24	2			None
Cheilitis	2	3	40 mc.	6	2			
Contact dermatitis (hands)	6	2- 3	75 mc.	24	3	1	2	1 more inflammation
Fungous infection feet and hands	16	3- 4	150 mc.	24	10	5	1	
Fungous infection nails	22	8-12	150 mc.	48	10	10	2	1 hyperkeratosis toe
Fungous infection (paronychial)	6	5	150 mc.	24	5		1	1 associated fungus of nails
Eczema, nummular	10	6	75 mc.	24		5	1	1 irritated
Erosio interdigitalis blastomycetica	1	4	75 mc.	24		1		
Folliculitis	3	3	75 mc.	24		1	2	
Granuloma pyogenicum	1	2	75 mc.	24			1	
Herpes progenitalis	4	5	75 mc.	24	2	1	1	Acute balanitis
Herpes simplex	2	4	75 mc.	24	1	1		
Keratosis senilis	36	3	150 mc.	24	33		3	Some irritation 3 cases
Larva migrans	2	2	150 mc.	24			2	No help
Leukoderma centr. acquisitum	2	7	150 mc.	24			2	Peripheral pigmentation
Lichen planus	2	3	75 mc.	24		2		
Lichen simplex chronicus ankle, thigh	16	5-10	75 mc.	24	8	8		
Lichen simplex nuchal	9	4- 8	75 mc.	24	8		1	
Lymphangioma circumscriptum	1	3	150 mc.	48	1			Excellent
Pruritus ani	24	4-14	75 mc.	24	18	5	1	
Psoriasis	17	5	75 mc.	24	16		1	1 inflammation
Seborrheic dermatitis	6	2	75 mc.	24	3	2	1	1 aggravated
Vesicular dermatitis hands	4	2	75 mc.	24		1	3	
Vitiligo	6	6-10	75 mc.	24			6	No help
Verruca acuminatum	4	3	75 mc.	24	3	1		
Miscellaneous	9	3	75 mc.	24	1	5	3	

TABLE 1

the body and paronychia, other than monilial, responded to thorium-X in the same manner as they do to moderate x-ray therapy. There is definite but limited improvement and other methods of therapy are of more importance than the radioactive one. A relatively large number of fungous infections of the nails were treated. In addition to the thorium-X, mechanical removal of the nails by grinding in the office and glass slide scrapings at home, plus fungicides were used in most cases. It was not felt that the radiation added much to the value of the treatment except in those cases where the infection was probably in the uppermost layers of the nail tissue.[3] However, thorough grinding and removal of the diseased nail tissue was routinely practiced and it is probable that the radiation had a reasonable chance to operate on the fungous growth because of this preliminary debridement. In one instance of fungous infection of the big toenail in an obese patient, the continued use of thorium-X as well as fungicides, led to a rather marked and persistent hyperkatosis of the glabrous skin of the tip and sides of the toe.

Herpes Simplex.—Six cases were treated and it was felt that the treatment offered more advantages than x-ray in that the effect was superficial and no deep later deleterious effect was evident. However, in two cases of herpes progenitalis, the 40 microcurie ointment was applied to the head and corona and quite acute balanitis of several weeks duration and much discomfort resulted. Later the treatment was modified by tying back the prepuce and by removing the material after an exposure of four to six hours instead of leaving the ointment in place for twenty-four hours.

Keratosis Senilis.—An average of three applications at two-week intervals of 150 microcuries resulted in the disappearance of most of the keratoses without further trouble. In some cases, where the skin was thin and many erythematous scaly areas were present, the resultant pigmentation was somewhat objec-

FIG. 1

Psoriasis of legs, before treatment.

FIG. 2

Psoriasis of legs cleared after three treatments with thorium-X 75 mc. in alcohol applied at fourteen-day intervals.

tionable. Also where the patient leads an active outdoor life in the sun, the pigmentation may be quite persistent and troublesome. Thus one must consider whether it is safe to add yet more fuel on top of nature's already heavy ultraviolet burden, especially in susceptible skins. Exclusive of the initial stinging and burning, the use of trichloracetic acid or other caustics will do the same work and just as well if they are used with care to avoid overcauterization. Or infiltration and very light searing with the actual cautery would produce quicker results. With the radiation, while the period of treatment is longer, there is no discomfort at any time and scarring is almost impossible to achieve.

Leukoderma Centrifugum Acquisitum.—Two interesting cases, a young mother of 25 and her son 7 years old, had almost identical lesions, one on the cheek and the other on the back. In spite of many applications, only accentuation of the pigmentation in the adjacent normal skin was accomplished.

Lichen Planus.—There was moderate improvement, such as one would expect from the usual applications of x-ray.

Lichen Simplex Chronicus.—Most of these cases were localized and all were of long standing with the therapeutic armamentarium previously otherwise exhausted. All of them benefited but not more so than would have been the case with x-ray. In some cases, the tolerance for x-ray had been used up, and the thorium-X was used to continue the help of radiation. No cure was expected, even with the use of antipruritics or protectives.

Lichen Simplex Nuchae.—This was considered a good indication for thorium-X instead of x-ray in order to avoid any possibility of permanently damaging the hair roots in the upper part of the neck just under the occiput. All except one patient were helped; in this instance, the dermatitis was too acute to withstand any radiation.

Lymphangioma Circumscriptum.—One case surprisingly melted away under three treatments with 150 microcuries painted on and left for 48 hours time each two weeks for the six weeks period.

Pruritus Ani et Vulvae et Scroti.—A fairly large number of these cases had previously had the limit of their x-ray tolerance and thorium-X ointment was used to continue therapy in the resistant stubborn cases. Here the effect was that of similar x-ray therapy, not any better but certainly just as good. Where the scrotum was involved in younger men, the ointment provided a good superficial radiation without the dangers of deeper penetration. However, where other etiologic causes could not be brought under control with other measures or by elimination, the

FIG. 3

Verrucae acuminatum penis six-months-old baby.

FIG. 4

Verrucae acuminatum penis six-months-old baby. Cleared after three treatments of 150 mc. thorium-X in propyl alcohol for five hours two weeks apart.

condition continued to be troublesome and surgical section of nerves was sometimes necessary.

Psoriasis.—The results in almost every case were excellent. In one young woman, an ardent sunbather, the pigmentation proved rather troublesome and she discontinued treatment. The dangers of x-ray over large areas can be avoided in these cases and time obtained to attack the disease by diet, lipophilic substances, and so on. The treatment provided a valuable and worthwhile adjunct to other methods of therapy.

Vitiligo.—It was hoped that the strong stimulation of thorium-X on the melanoblasts would be sufficient even in the depigmented areas to produce some activity. In spite of repeated treatments up to a total of fourteen, only peripheral pigmentation could be definitely detected. A few islands of pigmentation did appear in several cases but this was not more than had been noted in similar instances under other methods of therapy or in cases with no treatment at all.

Verrucae Acuminatum.—This was considered a good indication and the results in all cases verified this fact. The mucous membrane verrucae turned white in twenty-four hours and two treatments in 24 hours, repeated in two weeks, were sufficient to clear up the condition. This avoids the pain of the podophyllin treatment and the surrounding inflammatory changes but is a little slower. A case of verrucae completely ringing the prepuce in a six-month-old baby boy presented a problem which was solved easily by using thorium-X painted on in full strength of 150 microcuries and washed off in four and later six hours' time. No pain, only moderate reddening of the area and complete disappearance in two treatments two weeks apart were the result. I know of no other way in such a case superior to this method. It was safe, avoided acute balanitis of chemical origin, and avoided scarring.

Miscellaneous Cases.—Various dermatoses were treated, avoiding acute vesicular lesions. The general effect is that of mild x-ray therapy, no more and no less. Similar results in these cases could probably be achieved just as well by using very low voltage and a beryllium window tube x-ray exposure.

SUMMARY

Thorium-X, while subject to restrictions which apply to any radioactive substance, is a valuable adjunct in certain types of dermatoses. Its use should preferably be limited to physicians already expertly trained in the use of x-ray and radioactive materials, and it should not be used indiscriminately.

It is particularly valuable in the very superficial conditions where irradiation is indicated, either as a primary method or as an adjunct to other therapy. In psoriasis, keratosis senilis, lichen simplex nuchae, in the trimming and completion of therapy in hemangiomas, and in certain types of verrucae, especially the acuminate variety on tender mucous membrane surfaces, it is of definite value and at times may serve when other methods cannot. There are certain stages of pruritus ani et vulvae, of lichen simplex chronicus, and other conditions where deeper x-ray is not indicated, where the limit of x-ray safe therapy has been reached, where it may be used to bridge a gap or tide over a crisis.

Attention is called to adverse reactions of acute inflammation, or persistent pigmentation, and of hyperkeratosis following prolonged exposure to sufficient dosage of radioactive substance.

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DISCUSSION *(Abstract)*

Dr. J. W. Calvert, Bluefield, W. Va.—This interesting paper is fairly representative of the reviving interest in a product which is not new. I wish to emphasize a few points on thorium-X in several conditions.

(1) *Neurodermatitis.*—(a) If the involved area is the eyelids, it responds especially well to thorium-X. I use the alcoholic solution, applying it without a covering and allowing it to dry thoroughly before the eyes are opened. It is applied at weekly intervals, using 1000 esu/cc. or 150 mc. It required an average of eight treatments in my cases. After the condition seems under control, I increase the intervals between treatments.

(b) Severe reactions sometimes occur in the type of neurodermatitis one sees of the heavy lichenified

plaques in the anterior tibial areas. I had two such cases, one of which misrepresented the fact that he had previously received sixteen x-ray treatments of the standard superficial type; the other one I was unable to explain, and it was similar in nature. I have adopted certain precautions since then, with the results as successful as previously and have had no other such reactions. The precautions are: (1) only one application of the thorium-X is made, instead of repeating it five times as is ordinarily done, and 1000 esu are used. (2) A careful history is taken and those cases which have had previous radiation are eliminated. (3) Collodion and elastoplast alone without thorium-X are substituted at the first sign of any irritation. The cases that show any irritation are not treated again with thorium-X.

(2) *Psoriasis.*—I have found the use of advantage here in two places: (a) Psoriasis of the scalp. It works here as well as anything I have had experience with. It seems that there is no resulting baldness. I have not given over eleven treatments of 1000 esu at weekly intervals.

(b) To bring a spreading case under control so that some other form of therapy can be initiated.

(3) *Senile Keratoses.*—Three treatments at weekly intervals using 2000 esu I have found very successful.

(4) *Basal Cell Epithelioma.*—I use the technic, as described by Scher and Kline, of eight weekly treatments of 2000 esu, applying it with a curetting motion. I have been successful with it. I would suggest that this type of therapy be used in cases with an extremely poor prognosis.

(5) *Alopecia Areata.*—My results have been better than those of Dr. van de Erve, but that may be due more to my luck than anything else. I saw two cases of alopecia totalis, one of which showed no response, and one had considerable hair regrowth after being bald for many years. One practical difficulty in the use of thorium-X is that if there is a delay in the delivery and one receives it a day late, the results are altered, especially in treatment of an epithelioma.

Dr. Hermann K. Pinkus, Monroe, Mich.—While thorium-X has been used in England and European countries for about 40 years, the commercial supply has become available in the United States only recently, and this happens to be at the moment when great caution in the use of any radioactive material is impressed on us by the development of atomic science. However, thorium-X in therapeutic doses is certainly a very attenuated sister of the atomic bomb, and I believe that its proper use as a mild substitute for x-ray therapy in inflammatory dermatoses should reduce radiation damage to the skin rather than increase that danger.

It took ten to twenty years to teach the medical profession the inherent dangers of x-ray treatment. Forty years of experience with thorium-X in European countries should certainly have brought out its deleterious effects, if they were frequent. However, no publications upon them have come to my attention.

Still, when I use thorium-X, I prefer to apply it in smaller concentrations than are usually recommended, and I was happy to hear that Dr. van de Erve spoke of diluting the 150 microcuries concentration for certain purposes. In comparative studies which Dr. Owen Hendren and I recently did at the City of Detroit Receiving Hospital, concentrations as low as 20 to 75 microcuries per cc. were often found almost as effective and had fewer side effects, such as erythema and pigmentation.

In my own experience I divide the usefulness of thorium-X into three categories: first, there are those cases in which it is indispensable, and there have always been a few patients in my practice who were helped by thorium-X only, after all other measures had been exhausted.

Second are those cases in which it is the treatment of choice, and I name here mainly psoriasis with scattered patches, suboccipital dermatitis, which Dr. van de Erve mentioned too, and in which in my experience thorium-X works better than anything else. It clears up cases that have been very troublesome, and also any other lichenified dermatoses in hairy regions.

Third, there are many cases where thorium-X is helpful if it is used cautiously as a substitute for other forms of therapy, and I should say that it has the general indications of superficial x-ray therapy over which it has the advantage of safety; and also of tar ointments, over which it has the advantages of convenience, cleanliness, and less chance of irritation.

Dr. Gerald M. Frumess, Denver, Colo.—In our office, my associates and I have treated approximately 700 patients with almost 4000 applications of thorium-X. We have used exclusively isopropyl alcohol containing 150 mc. of thorium-X per cc.

Almost from the start, two facts impressed me: first, the very wide variation in reactivity of different skins to approximately similar doses of alpha radiation. I use the expression "approximately similar doses" advisedly. At best, dosage is more or less guesswork. The technic of application should, therefore, be as uniform as possible with respect to previous cleansing of scale and sebum from the skin, quantity of solution used per unit area, and vigor of application.

Second is the importance of avoiding an erythema in treating inflammatory dermatoses. Early in my experience with thorium-X, I produced perianal burns which persisted many weeks by failing to establish the patients' reaction to alpha radiation. I have now devised a crude but practical method of determining this tolerance. I mark off four quarter sized circles on the flexural surface of a forearm, cleanse the skin with soap and water and acetone, and put on test doses of one, two and three layers of thorium-X respectively on the first three circles, and three layers sealed with collodion on the fourth. The sites are read a week later, and the largest dose short of an erythema is selected for subsequent treatment of the inflammatory dermatoses. In many individuals, three applications of thorium-X covered with collodion fail to produce a reaction. In others, two or even one layer is followed by erythema and subsequent pigmentation, in which case diluted solution is used.

Our experience has agreed with that of Dr. van de Erve in treating the inflammatory dermatoses; that is, it is no better and no worse than x-radiation. I feel that alpha radiation is useless in treating well established alopecia areata and onychomycosis, reports in

the literature to the contrary notwithstanding. It achieves only partial but still often gratifying results in port wine stains. In a limited number of unusual, but very troublesome diseases, we found it vastly superior to beta and gamma radiation. Five cases of hypertrophic lichen planus cleared completely; two of localized amyloidosis showed subjective and objective improvement; and a case of extensive lymphangioma circumscriptum melted away.

In these and other non-inflammatory or hypertrophic conditions, erythema doses are desirable. In patients with keratosis senilis and old solar cheilitis too extensive to treat by the usual modalities, alpha radiation has become our first choice. I have had no experience with its use in epithelioma, finding conventional methods of therapy highly satisfactory.

Alpha radiation is the most effective measure I have ever used in the control of intractable pruritus ani, with a higher proportion of good results persisting for longer periods of time than with any other form of therapy. I have seen no permanent radiation sequelae even in patients who had previously received their full quota of x-ray therapy and whom I subsequently inadvertently burned with overdoses of thorium-X. I have seen marked improvement in leukoplakia vulvae even where involvement was so extensive that vulvectomy had been advised before alpha radiation was employed.

These are dermatologic conditions for which I feel thorium-X is superior to x-ray or radium therapy.

I believe that to condemn the use of alpha radiation without a thorough trial using a uniform technic is unfair to the agent, unfair to those whose claims result from wide experience with it, and denies oneself and one's students a very useful therapeutic tool.

CUTANEOUS PAPILLOMATOSIS, PSEUDO-ACANTHOSIS NIGRICANS, AND BENIGN ACANTHOSIS NIGRICANS*

By MORRIS WAISMAN, M.D.
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The purpose of this paper is to examine the clinical similarities and differences in certain dermatoses characterized in common by verrucous and hyperpigmented papules and plaques of varying extent. The dermatologic picture is manifested by a symmetric eruption of darkened, flat, warty papules which in the axillae, groin, neck, and elsewhere lead typically to a closely set hypertrophic mosaic of papules and exaggerated markings of the skin. In the literature three diseases are described exhibiting the features outlined: *papillomatose confluente et réticulée*, pseudo-acanthosis nigricans, and acanthosis nigricans.

In 1927 and subsequently, Gougerot and Carteaud[1] assembled cases of a rare and unique dermatosis which they designated *papillomatose confluente et réticulée*. The eruption, starting in adolescents and young adults in the intermammary area, was comprised of tiny, grayish uninfiltrated papules which tended slowly and progressively to run together, forming a rhomboidal plaque in the long axis of the trunk anteriorly. Laterally, following the submammary folds, the plaque extended toward the axillae. By confluence of the initial lesions a nearly solid, central sheet was produced, surrounded by a broad peripheral reticulum, the characteristic configuration. Posteriorly the lesions appeared along the vertebral furrow with lateral extensions in the interscapular, sacral, and intergluteal regions. The primary papule resembled at first a flat verruca; the merged lesions from a distance resembled the eruption of tinea versicolor. In each axilla was produced a hypertrophic papillary plaque showing increased prominence of the parallel crests and folds, grayish discoloration, and soft, pliant texture. Over the neck the markings of the skin were similarly altered. There were no mucosal lesions, nor were there important subjective sensations.

Pathologically, Gougerot and Carteaud described hyperkeratosis, diminution of the granular layer, slight atrophy of the rete malpighii, lack of normal palisading of basal cells and disappearance of intercellular bridges among the prickle cells, papillomatosis, absence of sweat glands, and fragmentation of elastic fibers in the cutis. Clinically they differentiated the eruption from acanthosis nigricans by the primary, slightly elevated flat papule, the moderate or inconstant pigmentation (as compared with the dark hue of lesions in acanthosis nigricans), the relatively insignificant degree of rugosity amounting in the axillae only to an exaggeration of normal folds, the confluent and reticulated disposition of lesions, which is foreign to acanthosis nigricans, and the freedom from attendant cancer.

Under the title "pseudo-acanthosis nigricans" Curth[2] described a dermatosis simulating acanthosis nigricans among obese per-

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sons with brunette complexion. Involving by predilection the axillae, neck, genitocrural areas, and intermammary and submammary folds, the disease appeared as darkened verrucous and roughened patches or as warty papules representing an enhancement of normal skin markings, whereas on the trunk it presented a marbled or reticulated pattern. Perspiration, maceration, friction and pressure were identified as factors capable of eliciting the appearance of lesions, and a familial incidence of the disorder was encountered.

The disease depicted by Curth exhibits some aspects of mild acanthosis nigricans clinically, and microscopically also the combination of hyperkeratosis, acanthosis, pigmentation and papillomatosis mimics the structure of acanthosis nigricans. There is no doubt that in the literature numerous cases of pseudo-acanthosis nigricans have been erroneously reported as benign acanthosis nigricans. In pseudo-acanthosis nigricans the lesions are usually not so extensive as in acanthosis nigricans, where the tendency to generalization may give rise to involvement of scalp, palms, soles and mucous membranes. Moreover, pseudo-acanthosis nigricans is a reversible phenomenon in that lesions have been observed to disappear after weight reduction and after the elimination of exciting irritants such as sweating and pressure.

Comparison of the foregoing clinical descriptions of *papillomatose confluente et réticulée* drawn from the papers of Gougerot and Carteaud and of pseudo-acanthosis nigricans paraphrased from the presentations of Curth, reveals so many features in common as to engender a deep suspicion that the authors are dealing with identical diseases. The clinical photographs illustrating their papers could easily be interchanged, so close is the resemblance. The supposition that the cases may be of the same disease is further strengthened by the similarity of histopathologic findings. It is true that Curth observed the constant relationship of pseudo-acanthosis nigricans to obesity, whereas Gougerot and Carteaud did not specifically name this accompaniment, but inspection of their communications on *papillomatose confluente et réticulée* discloses that where body weight and build are mentioned or pictured, the patients were stocky or obese. From these data, I am compelled to conclude that *papillomatose confluente et réticulée* and pseudo-acanthosis nigricans are one and the same disease.

The entity "benign" acanthosis nigricans has long been known. Although acanthosis nigricans manifests itself classically in association with an invariably fatal visceral malignant neoplasm, the same eruption may appear in persons in whom no malignant growth is evident. This, the benign form of acanthosis nigricans, begins at birth or during childhood. The "malignant" form of acanthosis nigricans may exceptionally occur in children, but far oftener the first signs of the eruption appear in adults. I am here concerned only with the benign (childhood, or juvenile) form of acanthosis nigricans which, because of its morphologic characteristics, its origin early in life, and its persistence must logically and properly be regarded as a nevoid disturbance of the skin.

Curth,[3] who has studied the disease exhaustively, has classed benign acanthosis nigricans as a genodermatosis, a disease with genetically transmitted features. The dermatosis may be visible at birth or it may evolve at any time during childhood or puberty, often becoming accentuated during adolescence and sometimes improving after adolescence. Familial examples of the disease have been recorded. What diverse agents stimulate the skin to react in this remarkable fashion, both in otherwise normal young persons and in victims of internal cancer, are undetermined. Curth has proposed the hypothesis that acanthosis nigricans is a specific benign disease always, a hereditary dermatosis capable of being elicited either by factors associated with cancer or by steroid hormonal changes of puberty. It is tempting to surmise that in both instances these factors are close chemical relatives. In the case of acanthosis nigricans which appears at birth or shortly afterward, unknown influences are involved, just as with other forms of congenital epidermal anomalies. While there is no way of separating dermatologically the benign from the malignant types of acanthosis nigricans, Curth has itemized differences with regard to age at onset, modes of activation, clinical course, and genetic mechanisms.[4]

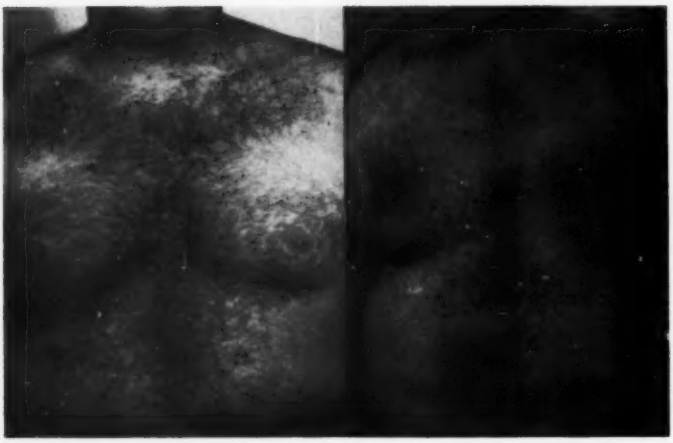

FIG. 1

Pseudo-acanthosis nigricans. Configuration of eruption on trunk.

Two cases are herewith reported, to exemplify each of the conditions just described and to emphasize distinguishing features in order that their differential diagnosis may be facilitated.

REPORT OF CASES

Case 1.—Pseudo-acanthosis nigricans. A white soldier, aged 23 years, a cook, was seen in 1945 through the courtesy of Dr. Kenneth Weiler, of St. Petersburg, Florida. Four years previously an eruption of scaling brownish papules had appeared over the presternal area and had gradually spread over the anterior portion of his chest. Two years later a new focus of lesions appeared on his buttocks, advancing upward over the back, and another group started over the nuchal area, spreading downward and laterally. He complained of pruritus during hot weather.

There was no familial history of a similar skin disease. His health was otherwise satisfactory.

The patient was of brunette complexion and stocky physique, measuring 66 inches in height and weighing 230 pounds. The eruption *(Fig. 1)* covered most of the chest anteriorly and almost all of the back, as well as the axillae, neck, inguinal areas, and inner aspects of the thighs. The initial lesions were flattened, dry, brownish papules with thin adherent scales. Coalescing into extensive superficial plaques, they lost their outlines and identity. A sepia colored mosaic was thereby produced, the furrows corresponding with the natural markings of the skin. Circinate islands of normal skin were scattered within a virtual sheet of conjoined lesions centrally, while arcuate, arborizing, and interlaced strands provided a reticulated aspect peripherally. In the axillae and over the vertebral furrow of the back the papules stood out prominently in a hypertrophic mass of polygonal, flattened warty figures. On the neck the papules were thickened and isolated. The mucous membrane of the mouth was unaffected, as were also the nails. An additional and unrelated finding was the presence of multiple painless subcutaneous lipomas on the trunk and extremities.

A specimen of skin was removed for biopsy from the right axilla. Microscopic examination *(Fig. 2)* disclosed an irregularly acanthotic and wavy epidermis, with atrophy at the tips of many of the projecting rete folds. The hyperkeratotic stratum corneum dipped between the folds, plugging the epithelial crypts. The stratum granulosum was thinned. Densely in the basal cell layer and diffusely distributed throughout the rete malpighii, melanin pigment was prominent. The elongated dermal papillae carried dilated capillaries. There was no inflammatory reaction. The connective tissue of the cutis appeared to be normal, but cutaneous appendages were absent.

Treatment consisted of administration of 200,000 units of vitamin A daily by mouth. In one month the lesions appeared less prominent, the scale thinner, and the pruritus greatly diminished. The patient was thereafter lost from observation by transfer to another station.

Case 2.—Benign acanthosis nigricans. A white girl, aged 9 years, seen in 1949, presented an extensive eruption since birth, comprised of pigmented papular and verrucous plaques in the axillae, on the neck, scalp, chest, inguinal areas, and extremities. The parents were not consanguineous nor was there a

FIG. 2

Pseudo-acanthosis nigricans. Section from axilla. Note hyperkeratosis, irregular acanthosis, epidermal atrophy at tips of acuminate rete folds, papillomatosis and absence of cutaneous appendages. (Hematoxylin and eosin x75.)

familial history of cutaneous disease. The patient was an only child. Treatment in the past with huge doses of vitamin A for what was regarded as ichthyosis had been ineffectual.

The patient was well developed physically and precocious mentally. Measuring 60 inches in height and weighing 110 pounds, she presented the musculoskeletal maturation of a girl of 12 years. The breasts were undeveloped and there was no pubic or axillary hair.

In the axillae, except at the apices, the rhomboidal markings of the skin were rendered prominent by scaling papules set in almost parallel lines *(Fig. 3)*. The lesions, of grayish-brown color, produced a picture resembling that of lichen simplex chronicus, but they were soft, supple, and velvety. The neck was similarly involved but without the marked hypertrophy of the individual papules. The presternal area, anterior aspects of the wrists and backs of the fingers and hands showed thickening, scaling, and dirty tan color. Over the antecubital fossas, the inguinocrural areas, and the medial aspects of the knees were circumscribed erythematous plaques. The points of the elbows appeared dark gray, pachydermatous, rough, and dry. In each popliteal fossa were prominent dark papules, some globular and others flattened, with adherent thin scale, arranged in striate horizonal groups and merging into the adjacent skin. The palms and soles showed diffuse keratoderma. A fine reticulum of superficial tannish scaling was present over the scalp.

FIG. 3

Benign acanthosis nigricans. Various areas of body, picturing pigmented papules of axilla and neck, thickening of skin of hand and fingers, plaques simulating lesions of lichen simplex chronicus on inner aspect of thigh and knee, pachydermatous appearance of point of elbow, and palmar keratoderma. Right upper photo of patient taken at age of 9, others taken at age of 12.

The "normal" skin of the face, extremities and trunk was soft, uniformly thickened, brownish in color, and exhibited increased depth of the fine surface furrows. On close examination the "normal" skin did not appear to differ qualitatively from the areas of the skin occupied by hypertrophic lesions. The nails and mucous membranes were free of disease.

Microscopic examination *(Fig. 4)* of a biopsy specimen of skin from the right axilla revealed a serrated surface, the acuminate rete projections interdigitating with the hyperkeratotic stratum corneum. The deeper levels of the stratum corneum, adjacent to the granular layer, were nucleated and acidophilic. The rete malpighii was atrophic only at the suprapapillary tips, and in but few places was it moderately acanthotic. The basal cell layer showed normal palisading. No evidence of increased melanin deposition was visible. Dilatation of capillaries prevailed in the elongated papillae, and a moderate infiltrate of lymphocytes was scattered diffusely throughout the upper portion of the cutis. The collagen was fine and loosely meshed. A few rudimentary hair follicles were present as well as an occasional sebaceous gland, but no sweat glands or ducts were observed.

Notes.—(1) The advanced musculoskeletal development of the patient was probably conditioned by hereditary factors, as both parents were well above average size, the mother measuring 70 inches in height, the father 75 inches. (2) No abnormality of sweating was observed by the patient except for anhidrosis of palms and soles. (3) The absence of epidermal hyperpigmentation was surprising. Evidently the darkening of the skin could be attributed to hyperkeratosis, as in ichthyosis, rather than to increased melanin. (4) The menarche occurred in

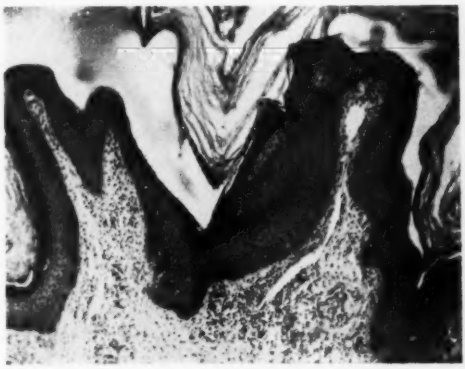

FIG. 4

Benign acanthosis nigricans. Section from axilla. Note hyperkeratotic and parakeratotic stratum corneum, acuminate rete projections with suprapapillary epidermal atrophy, papillomatosis, moderate infiltrate of lymphocytes, and absence of sweat apparatus. (Hematoxylin and eosin x75.)

July, 1952, at the age of 12. There has been no evidence of deleterious effect upon the skin, and indeed the patient said that there may have been slight improvement since then. At 12 years, the patient is anatomically well proportioned, measures 67 inches, and weighs 140 pounds.

COMMENT

The manifestation of similar or even identical gross morphologic and histopathologic characteristics among certain biologically unrelated dermatoses is recognized. When the resemblance is superficial, the diseases may be differentiated with ease by attention to clinical and microscopic detail. In other cases, a final diagnostic decision can be arrived at only after the patient has been observed over a period of time sufficient to disclose the tempo and direction of his disease. In this report two dermatologic entities are presented, cutaneous papillomatosis and acanthosis nigricans, with so many aspects in common that they have often been confused. Because the prognosis may differ materially in the two instances, it is important that they be distinguished early from each other.

To one perusing the literature, the clinical similarity between *papillomatose confluente et réticulée* and pseudo-acanthosis nigricans becomes immediately apparent. I believe that the two names identify the same disease, which is induced, as Curth has perceived, in obese persons by the interplay of heat, sweat, friction and maceration upon a predisposed skin. The reaction is manifested by thickening comparable to that of lichen simplex chronicus. Needless to say, the condition provoked is not true lichenification, as shown by absence of pruritus and of burnishing of the papules, as well as by the microscopic appearance. Nevertheless there may be a relationship between the thickening of skin produced by mechanical effects in lichen simplex chronicus and that caused by thermal and macerative effects in pseudo-acanthosis nigricans.

With regard to terminology, the name given the disease by Gougerot and Carteaud is fitting, in that it encompasses both histopathologic changes (papillomatosis) and clinical configuration (confluence and reticulation). But the name introduced by Curth has the advantage of simplicity, and it actually identifies a disease which closely resembles acanthosis nigricans, from which it must above all other dermatoses be differentiated. For the latter reasons, I prefer the designation pseudo-acanthosis nigricans.

Acanthosis nigricans in three forms, congenital, juvenile, and malignant, is unified by Curth's concept that the disease is a benign genodermatosis evoked by hormonal agencies, or by humoral products of malignant neoplasms, or by other means. Kierland[5] found certain differences: that pigmentation and epidermal hyperplasia in the malignant type were more marked than in the benign type, and that no patient in his series of cases of benign acanthosis nigricans developed lesions of the mucous membranes or of the distal portions of the extremities. Probably these are differences only of degree; as a matter of practicality one cannot discriminate clinically between the cutaneous changes of benign and malignant acanthosis nigricans. It is not unique for a single epidermal reaction pattern to masquerade as a dermatologic "front" for diverse biologic processes, and proof is lacking that in the various forms of acanthosis nigricans the provocative influences are alike or even related. Nor is there convincing evidence that endocrine disease is a prevalent accompaniment of benign acanthosis nigricans.

The histopathologic characteristics of acanthosis nigricans are classic,[6] consisting of hyperkeratosis, acanthosis with adjacent areas of atrophy of the prickle cell layer, dense melanin pigmentation of basal and dendritic cells, irregular papillomatosis, and sparse perivascular lymphocytic infiltrate in the cutis. This ensemble of changes is pathognomonic, even though occasional variations are encountered, such as absence of hyperpigmentation. The changes enumerated are present also, with quantitative differences, in pseudo-acanthosis nigricans. I was not able to differentiate the two diseases by microscopic examination of tissue from the axillae of my patients. But review of the photomicrographs published by Curth[2 3] fosters the impression that differentiation may, in some cases at least, be practical, because papillomatosis and epidermal atrophy are inconspicuous in her sections of pseudo-acanthosis nigricans. Histopathologic study of

more material is requisite before a final opinion can be formulated.

An analogue of the bizarre pattern of pseudo-acanthosis nigricans may be provided by the residual reticulated pigmentation which succeeds the circinate and arcuate lesions of erythema caloricum. It might be presumed that in pseudo-acanthosis nigricans, as in thermal injury to the skin, the hyperemic vascular network contributes an enduring melanotic imprint in a characteristic configuration. An explanation for the distribution of pseudo-acanthosis nigricans is furnished by involvement initially and predominantly of intertriginous areas. Very probably the effect of microörganisms must be considered as well as that of moisture and friction in the etiology and pathogenesis of the disease. One must surely be struck by the observation that the sites usually involved are also those commonly affected by miliaria, suggesting that in some way the activity of the sweat glands may account for the distribution of lesions of pseudo-acanthosis nigricans.

In my *Case 1* there were no observations pointing to impairment of the sweating mechanism, but it is possible that careful testing might have demonstrated abnormalities, as denoted by the absence of sweat glands and ducts in the microscopic sections from the axilla. Diminution or absence of sweating over the affected areas was recorded in the two cases of Gandola,[7] observations substantiated also by the finding of atrophy and decreased numbers of sweat glands histologically, and deficient or absent sweating response to injection of pilocarpine. Conceivably, the atrophy of sweat glands is a secondary phenomenon, caused by keratotic plugging of the sweat ducts, rather than of itself a primary abnormality.

The not infrequent papillomatous hyperplasia of the axillary folds in obese subjects, sometimes accompanied by tannish-gray discoloration, represents probably an abortive or localized form of pseudo-acanthosis nigricans. Argüelles Casals[8] described the appearance of similar lesions in the skin of Cuban Negroes. Better known is the propensity for certain types of skin to undergo pigmentary and hypertrophic changes under the influence of mechanical trauma. A site for observation of gradations of susceptibility to pressure or friction is the inguinal area of patients who wear a truss for reduction of hernia, where varying degrees of pigmentation, lichenification and even verruciform hyperplasia may at times be found. That external chemical and actinic factors may lead to similar changes is intimated by the following observation:

A 45-year-old white man, 69 inches tall and weighing 195 pounds, affected by extensive nummular psoriasis, was treated with crude coal tar ointment and ultraviolet irradiation by the Goeckerman procedure. The psoriasis improved rapidly, leaving a smooth, hyperpigmented stain at the site of each lesion. But a solitary patch, 2 cm. in diameter, over the xyphoid area became darkened and slightly warty. Biopsy from the lesion *(Fig. 5)* revealed hyperkeratosis, acanthosis, atrophy of the prickle cell layer at the tips of the papillae, fluting of the epidermal surface with plugging of the epidermal sulci, increased pigment in the basal cells, papillomatosis, and absence of cellular infiltrate in the cutis. No features of psoriasis were apparent. The lesion cleared spontaneously about a month after its appearance.

It is conjectured from this case that there are extra-axillary *formes frustes* of pseudo-acanthosis nigricans, the isolated and transient lesions of which may escape detection.

The presence of obesity in pseudo-acanthosis nigricans is, unfortunately, often cited as evidence of underlying endocrine disease. Students of the problem of obesity are in agreement that most instances of overweight represent simply the consequence of increased food ingestion, and that many of these cases are founded upon abnormal emotional states. Also, the demonstration solely of a subnormal basal metabolic rate, in the ab-

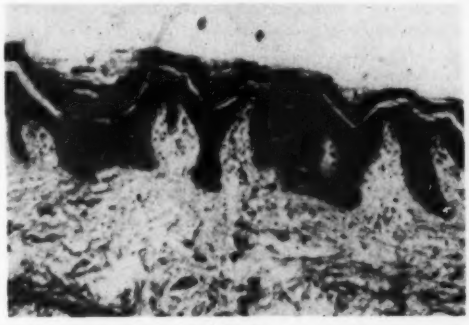

FIG. 5

Plaque which assumed verrucous aspect after treatment of psoriasis with crude coal tar ointment and ultraviolet radiation, showing hyperkeratosis, acanthosis, papillomatosis and absence of cellular infiltrate in cutis. The stratum corneum, although deeply stained, is entirely devoid of nuclei. (Hematoxylin and eosin x50.)

sence of correlative and supporting data, is insufficient documentation for the diagnosis of hypothyroidism. Obesity *per se* cannot therefore permit the presumption of an endocrine disorder. Positive clinical and laboratory proof of endocrine disease must be forthcoming before a label of "endocrine" obesity may be accepted. By these criteria, only an extremely small number of overweight persons can be shown to have underlying endocrine abnormality.

SUMMARY

Review and comparison of two dermatoses described in the literature under the designations *papillomatose confluente et réticulée* and pseudo-acanthosis nigricans, lead to the conclusion that they are identical diseases. Occurring in obese and brunette persons and resembling acanthosis nigricans except for the reticulated configuration on the trunk, the disease is provoked by perspiration, maceration and friction, and it may disappear after reduction of weight. The name pseudo-acanthosis nigricans is given preference in this paper.

Benign acanthosis nigricans, a genetically transmitted nevoid disturbance of the skin, is morphologically indistinguishable from the malignant form of acanthosis nigricans. Clinically, pseudo-acanthosis nigricans can be differentiated from acanthosis nigricans chiefly by the absence of a reticulated pattern of lesions in the latter. Whether a distinction can be made histopathologically is inconclusive, awaiting the study of more material.

It is pointed out that the sites on which lesions of pseudo-acanthosis nigricans localize are also those commonly affected by miliaria and intertrigo, suggesting that in some way the activity of sweat glands may play a part. Diminution or absence of sweating over affected areas has been recorded, and decrease or absence of sweat glands is an almost constant histopathologic observation. It is conjectured that a variety of external influences, physical, chemical, and actinic, may lead to reversible papillomatous changes in the skin. The tendency to attribute the dermatosis of benign acanthosis nigricans and the associated obesity and dermatosis of pseudo-acanthosis nigricans to endocrine disease is unsupported by clinical and laboratory proof.

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DISCUSSION *(Abstract)*

Dr. J. Lamar Callaway, Durham, N. C.—Dr. Waisman has presented the thesis that pseudo-acanthosis nigricans of Curth and *papillomatose confluente et réticulée* of Gougerot and Carteaud delineate the same clinical picture. Dr. Curth in her studies has separated a clinical picture consisting of a verrucous pigmented dermatosis occurring in obese, brunette individuals from true acanthosis nigricans (either benign or malignant). The following characteristics of pseudo-acanthosis nigricans seem to be outstanding.

(1) The gross clinical picture does not conform with the typical changes of acanthosis nigricans.

(2) It occurs in obese, dark skinned individuals whereas true acanthosis nigricans occurs in light as well as dark skinned individuals.

(3) It is reversible. Loss of weight results in cure.

Dr. Curth also recognized the similarity of pseudo-acanthosis nigricans to that of confluent reticular papillomatosis in a recent article. Considering the large number of obese individuals the incidence of these conditions must be extremely small.

Wise and Sachs reported a patient with confluent reticular papillomatosis of Gougerot and Carteaud in a stocky, 23-year-old Italian lady who had gained some 50 pounds in the preceding 6 years. It is interesting to note in this case there was improvement with local antibacterial measures, namely, ammoniated mercury ointment.

From the evidence now available it would seem likely that the two terminologies represent identical pictures. The occurrence of obesity and the reversibility of the process, however, are two characteristics which have not been reported previously with confluent reticular papillomatosis.

In a personal communication Dr. Helen Curth pointed out again to me that acanthosis nigricans is not necessarily a response to visceral cancer for in many instances the cancer, if present, may be mammary or bronchial; and secondly, while cancer may exert an activating effect on acanthosis nigricans this relationship may not be the only explanation for the acanthosis. There are examples of true cases of acanthosis nigricans in which the cancer precedes by many years the development of the skin lesions.

It appears that Dr. Waisman has helped further to eliminate a long descriptive name, to simplify and coordinate the acanthotic dermatoses.

Dr. Francis A. Ellis, Baltimore, Md.—Dermatology suffers too much from terminology, and Dr. Waisman has aided in changing one of the long descriptive terms, namely, *papillomatose confluente et reticulee*, to pseudo-acanthosis nigricans.

It is interesting to speculate on which undergoes the primary change, the epidermis or the cutis. The two, true and pseudo forms, histologically are supposed to look the same. If the pseudo form causes as much epithelial atrophy as the true form of acanthosis nigricans, I should not expect the former to undergo complete involution without any residual.

Can one differentiate histologically between pseudo-acanthosis nigricans and true acanthosis nigricans? Dr. Helen Curth in a personal communication says no, but I think that this point could be determined better by submitting slides from the two forms to a well trained dermato-histopathologist or pathologist to see whether he, without any clinical data, could differentiate them.

ORGANIC HYPERINSULINISM*

SURGICAL MANAGEMENT

By RALEIGH R. WHITE, M.D.†
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Following the discovery of insulin by Banting and Best[1] in 1922, it was noted that overdosage of insulin would produce a profound reaction. In 1924, Seale Harris[2] proposed the term, "hyperinsulinism," to designate the clinical syndrome of hypoglycemia. However, it remained for Wilder,[3] in 1927, to prove the unquestionable correlation between clinical hyperinsulinism and a malignant islet cell tumor of the pancreas. Dr. W. J. Mayo explored this first patient, a doctor, and found the pancreatic islet tumor with liver metastasis. After the patient's death, insulin was extracted from the metastatic deposits in the liver. In 1929, Graham,[4] of Toronto, was the first to resect an islet cell tumor and thus offer a cure for the patient suffering from organic hyperinsulinism.

Since these first cases, 264 hyperfunctioning islet cell tumors had been reported prior to 1950,[5] as follows:

Adenoma	154
Suspiciously malignant adenoma	40
Carcinoma	17
Found at operation	211
Found at autopsy	53
Total Cases	264

Before 1949, Thorn and his group[6] found 10 cases of hyperplasia of the islet cells with organic hyperinsulinism. It is impossible, apparently, to differentiate clinically adenoma, hyperplasia, and carcinoma of the islet cells. A similar clinical picture of hyperinsulinism may be found in each of these conditions.

The following three cases have been selected to report in detail as they illustrate problems of diagnosis and management of adenoma, carcinoma, and hyperplasia of islet cells.

ADENOMA OF ISLET CELLS WITH HYPERINSULINISM

Case 1.—An obese, 50-year-old man was seen at the Scott and White Clinic because of "blurred vision and weakness" for the previous two and one-half years. Five months prior to admission, he fainted and was unconscious for 10 hours following hard manual labor. A transient hemiplegia was noted. (Hemiplegia has been observed in 10 per cent of patients with hyperinsulinism.) Other attacks of equal severity followed, while lesser episodes might occur several times a day. He learned that by frequent eating severe attacks were avoided.

On admission, a glucose tolerance test showed:

Fasting blood sugar	55 mg. per cent
First hour	51 mg. per cent
Second hour	35 mg. per cent
Third hour	52 mg. per cent

The patient was placed on dietary management. Two weeks later, the fasting blood sugar was 60 mg. per cent. During the ensuing four months, he continued to have weak spells, but had only one convulsion. He could precipitate an attack by 30 minutes of hard work.

A glucose tolerance test at that time revealed:

Fasting blood sugar	76 mg. per cent
Second hour	74 mg. per cent

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Third hour.....28 mg. per cent
Fourth hour.....34 mg. per cent

The patient continued to have difficulty. A fasting blood sugar was noted to be 33 mg. per cent. Surgical exploration of the pancreas was advised. At operation, a small nodule, 1 cm. in size, on the anterior aspect of the head of the pancreas was locally resected. A wide excision was not done because of fear of injuring adjacent pancreatic ducts.

Postoperative fasting blood sugar was:

First day.....95 mg. per cent
Third day.....90 mg. per cent
Eleventh day.....62 mg. per cent

At a follow-up examination 10 months postoperatively, the patient had experienced none of his previous symptoms, and said that "he felt perfectly well and better than he had been in 10 years." Although the patient was asymptomatic at this time, a glucose tolerance test showed:

Fasting blood sugar.....54 mg. per cent
Three hours.....58 mg. per cent
Four hours.....33 mg. per cent
Five hours.....64 mg. per cent

Three years postoperatively, he developed a recurrence of fainting spell; fasting blood sugar was 33 mg. per cent. He was advised to have further surgery, but he refused. Six years postoperatively, he was again examined and showed evidence of mental deterioration. The fainting attacks had continued. He ate one pound of sugar a day. His fasting blood sugar was 47 mg. per cent. The patient was later operated upon at the Mayo Clinic where a hyalinized adenoma, 1 cm. in diameter, was resected from the posterior aspect of the head of the pancreas.

A recent follow-up letter on this patient (now 6 years postoperatively, 12 years after the initial operation) says that he is well. He recently had one spell of weakness and became dazed while working. He has continued to eat a large amount of sugar.

An adenoma may be difficult to find as well as to remove. In Whipple's series,[7] an overlooked tumor was found at the second operation in eight instances, in seven of which the adenoma was in the head of the pancreas. The over-all mortality[5] for removal of adenoma with hyperinsulinism has been 9.5 per cent in cases reported to 1950.

The question arises as to whether this patient had a remnant of the original adenoma which persisted until the second operation or whether two separate adenomas were present and resected. Under any condition, it is extremely important to explore the entire pancreas and ectopic sites thoroughly as multiple adenomas occur in 12 per cent of cases.[6] The presence of multiple adenomas should be suspected if excision of a benign adenoma fails to relieve the symptoms of hyperinsulinism.

MULTIPLE ADENOCARCINOMA OF ISLET CELLS WITH HYPERINSULINISM

Case 2.—An obese, 53-year-old man reported to the Scott and White Clinic. His history revealed recurring attacks of convulsive seizures with coma for six years. The onset of his illness had occurred abruptly about 10 A.M. while working in an airplane factory. Daily attacks had appeared since, especially in the mid-morning, mid-afternoon, and early in the morning before breakfast. He learned that ingestion of orange juice and sugar would prevent an attack or relieve one within 10 minutes. If food was not eaten, he would remain in a coma for one hour, or more. He had been observed in a mental institution because of these symptoms, and had been advised to have a craniotomy.

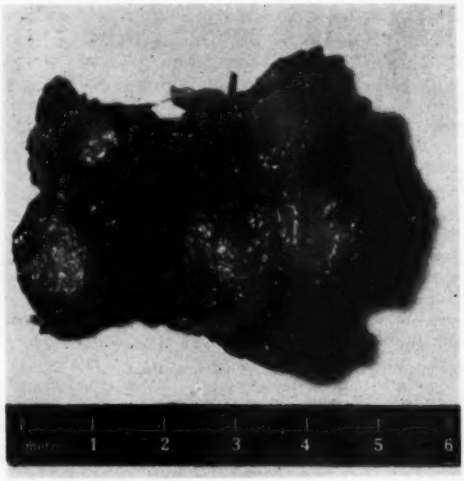

FIG. 1, CASE 2

Multiple carcinoma of islet cells of pancreas.

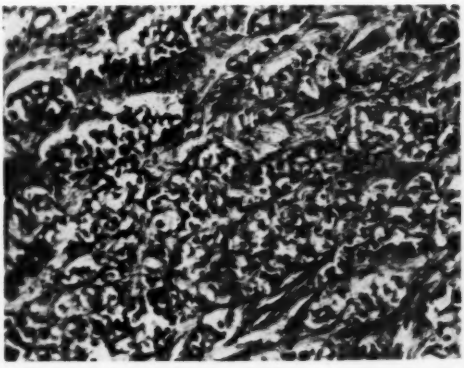

FIG. 2, CASE 2

Multiple carcinoma of islet cells of pancreas showing microscopic pathology.

At clinical investigation, a bromosulfalein liver function test showed grade II dye retention. The cephalin-cholesterol test of liver function was normal. The fasting blood sugars were 90 mg. per cent and 80 mg. per cent on admission. The following day, fasting blood sugars were 26 mg. per cent and 16 mg. per cent.

A glucose tolerance test showed:

Fasting blood sugar	60 mg. per cent
First hour	130 mg. per cent
Second hour	100 mg. per cent
Fourth hour	45 mg. per cent

Surgical exploration of the pancreas was advised. The author operated upon this man through a generous transverse incision. Continuous spinal anesthesia was employed. Two distinct tumors *(Fig. 1)* were found in the distal portion of the body of the pancreas, approximately two-thirds of the body of the pancreas being resected. Microscopic examination *(Fig. 2)* of each tumor showed islet cell carcinoma.

On the first postoperative day, the blood sugar was 185 mg. per cent. On the second day, it was 270 mg. per cent. On the sixth day, the blood sugar was 140 mg. per cent, and on the eighth, 150 mg. per cent. On the twenty-third postoperative day, a glucose tolerance test showed:

Fasting blood sugar	95 mg. per cent
30 minutes	170 mg. per cent
1 hour	165 mg. per cent

The glucose tolerance three months postoperatively was:

Fasting blood sugar	110 mg. per cent
First hour	180 mg. per cent
Second hour	150 mg. per cent
Third hour	70 mg. per cent

In a recent letter, over two years since operation, the patient says that he is perfectly well, eats regularly, has had no more attacks and is doing hard manual labor.

In a review of the literature up to 1950,[5] 23 recorded cases of resection of multiple adenoma of islet cells had been reported. (Twelve per cent of patients with islet cell tumor will have more than one adenoma.[6]) If the tumors reported here are biologically malignant, then this is the fifth case, of which I am aware, of multiple carcinoma of islet cells occurring simultaneously in the pancreas. One cannot wait too long to explore these patients as one out of twelve of all islet cell tumors will be malignant.[6] The tumors must be resected early before metastasis occurs.

These patients often become mildly diabetic for a few days after removal of a hyperfunctioning islet tumor. This depression of normal pancreatic function is temporary and corrects itself spontaneously.

HYPERPLASIA OF ISLET CELLS WITH HYPERINSULINISM

Case 3.—A baby boy *(Fig. 3)*, five months old, was brought, in a comatose state, to the Scott and White Clinic on June 22, 1947.[8] He had been apparently well until five days before admission when clonic convulsions developed involving the left side, and he had lapsed into stupor. These seizures continued to occur at intervals, and the baby became more stuporous and would not eat. The parents were not diabetic, and the baby had an uncomplicated birth by cesarean section. He was bottle fed. The only suggestive information obtained was that the baby had always had a big appetite, and the parents had found it difficult to maintain a four-hour feeding schedule; he had continued to require a 2 A. M. feeding. On physical examination, the baby was observed to be remarkably well nourished. His rectal temperature was 101° F., pulse rate 160, and respiratory rate 48. The head circumference was slightly larger than average for the child's age, but remained 1 cm. below the normal circumference for a child one year of age. The anterior fontanel was open and flat. The percussion note of the head was normal. The pupils were dilated and did not react to light. A congenital nystagmus was noted. The ocular fundi were normal. The child had hemiplegia on the left side. The deep tendon reflexes were reduced in the arms and increased in the legs. Bilateral Babinski signs were elicited. A seizure was observed by the examiner; it began with twitching of the left side of the face, followed by clonic jerking of the left arm and jerking of the left leg muscles; after several minutes, the baby began "chewing and sucking" movements. This attack lasted for five minutes.

Results of laboratory studies were as follows: Hemoglobin 11 grams per 100 cc.; red blood cell count 4,030,000; and white blood cell count 11,450, with 53 per cent neutrophils, 40 per cent lymphocytes, and 7 per cent eosinophils. Roentgenograms of the chest and the skull (anterior-posterior and lateral views) were normal. In spinal puncture, the initial spinal fluid pressure was 47 cm. of water (the child was

FIG. 3, CASE 3

Well-nourished infant with organic hypoglycemia.

struggling), and the final pressure was 22.5 cm. of water. The cerebrospinal fluid was clear and contained one lymphocyte per cu. mm. and 16 mg. of sugar per 100 cc. The Eagle test for syphilis was negative. Ventriculographic examination revealed no abnormalities except for some increase in subarachnoid fluid. The blood sugar level was 31 mg. per cent. A cephalin-cholesterol flocculation test was negative. The urine contained 0.18 Ehrlich units of urobilinogen, but was otherwise normal.

The child was placed on frequent high protein feedings, supplemented by parenterally administered dextrose, and on this regimen remained conscious most of the time. The hemiplegia improved; however, when feedings were given at longer than four-hour intervals, clonic seizures occurred. The fasting blood sugar level remained low, being 32, 31, 43, and 39 mg. per cent. A glucose tolerance test done at this time gave the following results (1.75 Gm./kilogram):

Fasting blood sugar	53 mg. per cent
One hour	175 mg. per cent
Two hours	104 mg. per cent
Three hours	81 mg. per cent

After subcutaneous injection of 0.2 cc. of 1:1,000 dilution of epinephrine (adrenalin®), the fasting blood sugar rose from 41 to 69 mg. per cent after one-half hour and to 84 mg. per cent after one hour. Epinephrine in oil administered twice daily maintained the blood sugar level within normal limits for eight hours after ingestion of food. While the blood sugar was contained within a normal range by frequent feedings and epinephrine in oil injections, the child's mental status seemed to improve and the neurological signs cleared almost completely; the baby was obviously mentally retarded, however, and it was concluded that permanent cerebral damage had occurred. The parents were advised of this condition. It was apparent, also, that unless the hypoglycemia could be more readily controlled further cerebral damage was imminent. Accordingly, on July 14, 1947, exploratory laparotomy was done by the author through a transverse abdominal incision, with the patient under nitrous oxide, oxygen, and ether anesthesia. Thorough exploration of the pancreas revealed no gross pathologic changes *(Fig. 4)*. A subtotal pancreatectomy was performed, with removal of the neck, body, and tail of the pancreas. This section of the pancreas was examined by the pathologist. It was 75 mm. in length, 12 to 15 mm. in width, 10 to 12 mm. in thickness, and weighed 4 grams. Twenty-two serial blocks of tissue were fixed, and several microscopic sections were made from each block. No evidence of islet cell tumor was found. The average islet cell count of the greater part of the body and tail of the pancreas was 5 per low power field; however, the proximal portion of the body, the islet cell count showed an abrupt increase to 16 per low power field, and here some islet cells had become confluent into masses difficult to separate into individual units. In order to determine the normal islet cell count for a 5-month-old baby, specimens of apparently normal pancreas glands of babies of this age range who had died from unrelated causes were studied and islet cell counts were made. The average count in these control specimens was 6 islet cells per low power field. From a pathologic viewpoint, a diagnosis of hyperplasia of islet cells *(Fig. 5)* was believed justified.

The baby's postoperative convalescence was satisfactory. The blood sugar level was noted to be 185 mg. per cent on the evening of the operation. The fasting blood sugar level was 112 mg. per cent on the third day after the operation, 127 mg. per cent on the fourth day, 105 mg. per cent on the fifth day, and 106 mg. per cent on the ninth day. In a glucose tolerance test (Exton and Rose test) done on the seventh postoperative day, the fasting blood sugar level was 99 mg. per cent; the blood sugar level one hour after injection of glucose was 130 mg. per cent, and two hours after was 125 mg. per cent.

The baby was dismissed from the hospital 11 days after the operation. Two weeks later, he began to have clonic jerks on the right side of the body, the attacks occurring at irregular intervals, from a few hours to several days apart. (Preoperative seizures had been on the left side.) These attacks were not prevented or relieved by ingestion of food. Two months after the operation, the patient was re-examined at the clinic. There was noticeable improvement in his mental status; he attempted to crawl and to hold up his head. The blood sugar level after fasting overnight was 122 mg. per cent; after a 22-hour fast, the blood sugar level was 77 mg. per cent. An encephalogram revealed cortical atrophy involving the left frontoparietal

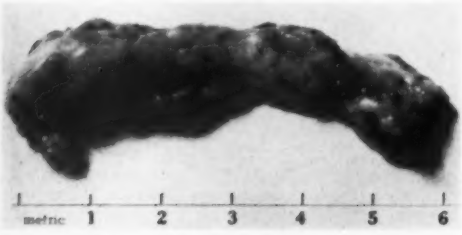

FIG. 4, CASE 3

Specimen of pancreas following massive subtotal pancreatectomy in a 5-month-old infant.

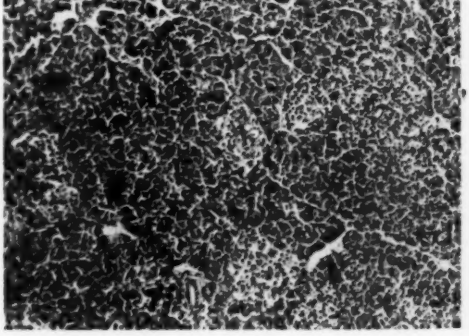

FIG. 5, CASE 3

Hyperplasia of islet cells in body of pancreas of 5-month-old infant.

area. Fifteen months after surgery, the baby was again observed, and the fasting blood sugar level was 75 mg. per cent. There had been no significant neurological improvement. In a recent follow-up letter, 43 months after the operation, information was received that the child eats three meals a day, but has not shown significant mental improvement.

In a collected review, Howard, Moss, and Rhoads[5] found only 11 reported cases of hyperplasia of islet cells with hyperinsulinism in children under 15 years of age who had been operated on for hyperinsulinism. These authors say that four of the children were cured by excision of an adenoma in the pancreas, while subtotal pancreatic resections were done in two children in whom no tumor was located in the gland. In one of these latter children, as reported by Graham and Hartmann,[9] approximately 80 to 90 per cent of the pancreas was resected, resulting in relief of the hypoglycemia; however, the child continued to show mental retardation. Pathologic examination of the resected pancreas demonstrated a normal gland. The cure of the other child by subtotal resection was reported by Callaway.[10] Examination of the pancreas in Callaway's case revealed hyperplasia of islet cells. Dannenberg[11] reported a case of a three-year-old girl who, since the age of 13 months, had suffered recurrent convulsive seizures associated with severe hypoglycemia and whose parents refused to allow surgical treatment. The child died in an attack, and autopsy revealed hyperplasia of islet cells. Sherman[12] described the case of a baby girl with uncontrollable hypoglycemia who died at the age of six weeks. Autopsy revealed an islet cell adenoma in the tail of the pancreas.

In a report by Malamud and Grosh,[13] it is stated that in early hypoglycemia cerebral recovery occurs with prompt treatment, but that after a prolonged period of hypoglycemia, irreversible organic brain damage occurs. Cases observed at autopsy showed advanced destruction of the cortex, thalamus, and corpus striatum. In our case, the child had been subjected to hypoglycemic shock for approximately one week. Even though the hypoglycemia in this baby was relieved by subtotal resection of the pancreas and the blood sugar level was restored to normal limits after surgery, irreversible cerebral damage had already occurred, and further mental development did not follow. It is our opinion that the hypoglycemia in this case was secondary to hyperinsulinism resulting from hyperplasia of the islet cells of the pancreas.

It is well recognized that fluctuating hypoglycemia is not rare during the first few days or weeks of life[14] and that, at times, the blood sugar level may be considerably depressed without producing clinical symptoms in the newborn.[15] As a rule, the blood sugar level becomes stabilized about 14 days after birth, without complications. In other infants, persistent hypoglycemia may pose an important and urgent problem, although in the great majority of these infants the condition can be regulated by careful and persistent dietary management. Not all patients can be managed so satisfactorily, however, and the physician should be aware of the possibility of organic hyperinsulinism with the attendant danger of irreversible cerebral damage resulting from uncontrollable hypoglycemia. If organic hyperinsulinism is suspected, one should explore the pancreas for islet cell tumor early in the course of the disease before permanent and irreversible brain damage occurs.

DIAGNOSIS OF ISLET CELL TUMOR OF THE PANCREAS WITH HYPERINSULINISM

Islet cell tumor must be carefully differentiated from other conditions causing profound hypoglycemia, the most important of which are hepatic insufficiency and functional hypoglycemia. Whipple's triad of symptoms[6] is of the greatest importance in accurate diagnosis. Whipple required that the patient suffer a typical attack precipitated by fasting, during which the blood sugar was depressed to 50 mg. per cent, or below, with prompt relief of symptoms by the administration of glucose. If surgery is restricted to patients meeting these criteria, a large percentage of islet cell tumors will be found. The average fasting blood sugar of all cases successfully diagnosed up to 1950[5] was 32 mg. per cent, and only six tumors were noted in patients with a fasting blood sugar consistently above 50 mg. per cent.

PLAN OF SURGICAL MANAGEMENT

Among cases reported, it was noted that if an adenoma was found and resected, 87 per cent of the patients[5] were completely relieved of symptoms. Because 12 per cent of islet cell tumors are multiple, the surgeon must explore the remaining gland and ectopic sites for other adenomas.

If, however, detailed exploration of the pancreas is noncontributing, all ectopic sites are clear, and the adrenals and liver appear normal, what should the surgeon do?

In Rhoads' collected series[5] *(Fig. 6)*, he noted islet cell tumors to be evenly distributed throughout the gland. The body and tail of the pancreas were the site of 71 per cent of tumors reported. It seems logical that the suggestion of Dr. Whipple[16] is valid, in that a massive subtotal resection of the gland should be done, removing the neck, body, and tail for the following reasons:

(1) In a follow-up of 118 patients[5] who were explored for hyperinsulinism and no tumor found, and the pancreas not resected, in 31 per cent (37 patients), an adenoma was later discovered either at operation or at autopsy. A negative exploration cannot be relied upon completely to rule out an islet cell tumor. These adenomas may be quite small and only revealed on serial section of the pancreas.

(2) If a massive subtotal resection is accomplished, the surgeon has a 70 per cent chance, on the average, of removing a small hidden adenoma. (Rhoads[5] found 71 per cent of adenomas were located in the neck, body, and tail of the pancreas.)

(3) David[17] noted that among patients treated by massive subtotal resection without obvious tumor, 63 per cent were cured of hypoglycemia.

(4) The diagnosis of hyperplasia of islet cells with organic hyperinsulinism can be confirmed only by careful microscopic study of the excised gland. It is our opinion that hyperplasia of islet cells is best treated by massive subtotal resection.

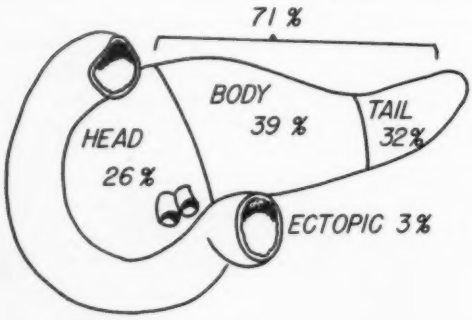

FIG. 6

Distribution of islet cell tumors of pancreas with hyperinsulinism.

If the patient's severe uncontrollable hypoglycemic reactions persist after subtotal resection of the pancreas, the more difficult and hazardous removal of the head of the gland should be considered for the eradication of the remaining 26 per cent of islet cell tumors.

Priestley[18] removed the entire pancreas, and only by serial sections was an 8 mm. islet cell adenoma discovered in the head of the gland.

The author wishes to thank Dr. M. W. Sherwood for permission to report *Case 1*.

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FUNCTION AND MORPHOLOGY IN THE CLASSIFICATION OF NEPHROSES*

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Introduction.—The concept of pathology, as I understand it, does not permit a separation of function from morphology. Structural abnormalities and functional disorders are interrelated by cause and effect. Any classification of renal diseases should therefore be primarily concerned with their correlation. Yet, those in existence are based either on clinical observations, disregarding structural changes, or on morphologic concepts, giving secondary consideration to functional aspects. The classification which I propose is intended to integrate both morphology and function into the basic concepts of renal lesions. This presentation is confined to the skeleton of a classification of nephroses, omitting all details. Brief discussions of some of the lesions are included merely for the purpose of illustrating the principles on which this classification is based.

Our present state of knowledge does not allow us to define many renal lesions on purely morphologic grounds without contradicting physiologic experiences. Abnormalities of structure and function frequently fail to coincide and are rarely confined to one anatomical unit, for example, glomeruli, tubules or vessels. Also, the nature of pathologic processes may vary widely with the stage and degree of severity of a disease. If we want to determine whether the primary lesion is glomerular or tubular, whether degenerative or inflammatory, we often have to estimate the predominance at certain phases of the diseases, and hence we should be prepared to expect that such a procedure is to remain indecisive. As a result, most classifications admit the existence of transitional forms between basically different orders, adding to the ambiguity and confusion of terminology.

Principles of Proposed Classification.—Synthesis of structural and functional abnormalities constitutes the first basic requirement of the proposed classification. This is achieved by placing our observations into a system of alternating morphologic and functional categories *(Table 1)*.

These categories are to be supplemented by subordinated categories, such as those of pathogenesis and etiology, if they are known. The manner in which this order of categories can be applied is demonstrated with the schematic drawing *(Fig. 1)* illustrating the instance of lipoid nephrosis.

From a morphologic point of view two major changes are observed. Those in the glomeruli may vary from hardly perceptible lesions to severe degeneration of the basement membrane; those in the tubules are characterized by fatty disorder. The most consistent and structurally predominant alteration is that of the tubules and it may therefore seem arbitrary to designate the glomerular lesions as the principle or predominating factor. If, however, morphology and function are to be integrated in one concept, we cannot depend only on the nature and site of morphologic lesions but must take into consideration equally their functional importance. Clearly, it is the glomerular apparatus which shows a significant functional abnormality, namely, hyperpermeability for albumin; whereas, the tubules show no recognizable impairment of function.

The pathologist may find such procedure iconoclastic inasmuch as the significance of a structural change is made dependent on functional implications, but he must realize that functional disorders in renal diseases frequently can not be comprehended as a result of morphologic changes. Within this classification, therefore, we confine ourselves to the consideration of renal lesions in terms of

GENERAL ORDER OF CATEGORIES

First Order.—Concepts of general pathology
- Metabolic anomalies
- Inflammation
- Circulatory disturbances
- Tumors
- Malformations

Second Order.—State of function
(Determines whether the lesion of the first order is related to normal or abnormal function)

Third Order.—Anatomical structures

Fourth Order.—Type of functional disorders

TABLE 1

*Chairman's Address, Section on Pathology, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

morphologic manifestations of functional disorders.

Accordingly, the predominance of certain facets of a complicated lesion is determined by functional abnormalities if these can be clearly recognized as occurring in specific anatomical units, rather than by mere morphologic preponderance. The latter may, and often is, irrelevant in regard to renal function and to the natural course of the disease.

The second basic requirement of this system is a negative one. It does not recognize the existence of transitional forms between two diseases.

The term "transitional" implies that one condition can change into another. Nephritis, for instance, can supposedly be transformed into nephroses; benign nephrosclerosis into malignant nephrosclerosis. If a disease, which is known to occur as a pure and unadulterated morphologic-functional entity, is observed in conjunction with another, we conceive of such a mixture as superimposition and not as transformation unless we have evidence that both are merely different manifestations of the same pathogenetic or etiologic factor. Our present knowledge, however, does not justify such assumption. We know of many totally divergent conditions upon which either nephrosis or malignant nephrosclerosis may be superimposed. Glomerulonephritis may or may not pass through a nephrotic stage. The nephrotic syndrome which may occur as an entity by itself is in no sense an inherent factor of glomerulonephritis, but it may or may not be superimposed. It is indeed presumptive to read more into the simultaneous or subsequent occurrence than superimposition.

Table 2 represents an incomplete skeleton of a classification of metabolic anomalies of renal parenchyma.

This classification leans heavily on Fahr's system which has come closer to a correlation of function and morphology than any of the modern ones, but the greater emphasis on physiology compels us to re-define some of the basic concepts.

Definitions.—Nephrosis, in Fahr's terminology, includes all degenerative changes of the renal parenchyma except for those of the vessels which he reluctantly and "for practical reasons" separated under the heading of nephrosclerosis. We have eliminated this inconsistency and have assigned the nephroscleroses their proper place among other degenerative lesions.

It is necessary to clarify the meaning of degeneration, which in most kidney classifications is applied in its narrow morphologic sense. The term "metabolic anomalies," as used here, refers to all types of disturbances of metabolism of cells and tissue matrix, including neuromuscular dysfunction. These metabolic disorders, though not necessarily associated with structural changes, may be-

(I) Nephroses: Functionally significant

- (A) Glomerular nephroses
  - (1) Genuine lipoid nephrosis
  - (2) Amyloid nephrosis
  - (3) Gestation nephrosis
  - (4) Intercapillary glomerular nephrosis
  - (5) Wire-loop glomerular nephrosis
  - (6) Stasis nephrosis
- (B) Tubular nephroses
  - (1) Functionally non-specific
    - (a) Endogenous type
    - (b) Exogenous type
      - (1) Mercurial nephrosis
      - (2) Phenol nephrosis
      - (3) Diphtheria nephrosis
      - (4) Others
  - (2) Functionally specific
    - (a) Renal glycosuria
    - (b) Renal acidosis
    - (c) Salt losing nephrosis
    - (d) Diabetes insipidus
- (C) Vascular nephroses
  - (1) Benign nephrosclerosis
    - (a) Compensated
    - (b) Decompensated
  - (2) Malignant nephrosclerosis
  - (3) Cortical necrosis

(II) Cellular metabolic disorders: functionally insignificant (The term "nephrosis" is not applied to these lesions)

- (A) Tubular involvement
  - (1) Hydropic disorder
  - (2) Hyaline droplet disorder
  - (3) Lipoid disorder
  - (4) Carbohydrate disorder
  - (5) Bile disorder
  - (6) Hemoglobin disorder
  - (7) Calcium disorder
  - (8) Urate disorder
  - (9) Etc.
- (B) Vascular involvement
  Arteriosclerotic nephrosclerosis, focal

TABLE 2

come manifest by abnormal accumulation of normal cell constituents or by the appearance of abnormal substances. We refer to these changes, however, as degeneration only if there is evidence that they affect the physiologic balance to a point that normal function is impaired.

If, therefore, we define degeneration as a metabolic disorder resulting in impairment of normal function, we have come to recognize that we cannot rely solely upon morphologic changes as criteria for degeneration. Structural alterations may be indicative of degeneration, particularly in their irreversible state, but, as in the instance of storage phenomena, they may occur without demonstrably affecting the physiologic balance. On the other hand, functional abnormalities may clearly indicate a metabolic disorder without recognizable morphologic changes. Such abnormalities must nevertheless be listed as degenerative in accordance with the definition.

If we apply these considerations to the organ as a whole or to its anatomical units, we are led to distinguish between such metabolic anomalies which result in functional impairment, to which we refer as nephroses, and such metabolic anomalies not associated with demonstrable impairment of function to which we refer simply as cellular metabolic disorders.

Nephrosis, therefore, is defined as a metabolic disorder of chemical and/or physical structure of the renal parenchyma, incompatible with normal function. Any or all anatomical structures may be involved. Morphologic changes may or may not be present.

It is apparent that nephrosis so defined cannot be subdivided on purely morphologic ground, since the structural changes are too variable and, as pointed out, not reliable. Physiologic criteria, however, are quite distinctive and permit us to determine clearly the predominant anatomical unit. We have no difficulty in recognizing a glomerular-tubular and vascular nephrosis on a functional basis and shall define these as follows:

Glomerulonephrosis.—Metabolic disorders of renal parenchyma, characterized by hyperpermeability of glomerular capillaries for albumin (nephrotic syndrome).

Tubular Nephrosis.—Metabolic disorders of renal parenchyma characterized by predominant abnormalities of tubular function.

Vascular Nephrosis.—Metabolic disorders of vascular apparatus characterized by changes of the renal circulation which affect the systemic arterial circulation, specifically the blood pressure.

At first glance, these definitions may not seem to have much practical value for the pathologist, but as we enter the analysis of the various subgroups, it will become quite clear that surprisingly often structural lesions can be closely related to these types of functional abnormalities.

In the practical application of the system, our major task consists of the separation of functionally significant from functionally insignificant morphologic changes. This is readily done in the uncomplicated cases, as in the instance of pure lipoid nephrosis, but may become difficult if we encounter a complex pathologic picture.

We are frequently dealing with systemic diseases which manifest themselves in two or more sets of morphologic-functional disorders in two or more anatomical units. They may occur together or the systemic disease may be associated with only one or the other. Eclampsia, for instance, may be associated with glomerulonephrosis or vascular nephrosis (in the form of arteriolar spasms), or both. Our present knowledge does not permit us to assume that the changes in the glomeruli have the same pathogenesis as the arteriolar disorder and, consequently, both are segregated in different orders, although they appear to be merely different manifestations of one systemic disease.

On first thought this method of separation may seem to be pedantic or even confusing, but it is in reality the key to adequate analysis of any given complicated instance. The facts are that the glomerular nephrosis as such in eclampsia is indistinguishable from that which occurs in lipoid nephrosis. Likewise, the arteriolar spasm with its effect on the parenchyma may occur not only in eclampsia but in conjunction with various other conditions. It is the concurrence of both which makes the renal lesions diagnostic for eclampsia.

It is the object of this classification, therefore, to segregate the basic units of morpho-

logic-functional disorders so that we may observe the various patterns in which they may occur concomitantly or superimposed. It is this pattern which will give us the clue to the systemic disease in which the kidney participates. As an addendum to the classification of renal diseases proper, a coordination of the basic disorders on the higher level of systemic diseases must also include the involvement of other organs.

DISCUSSION OF ILLUSTRATIVE DISEASES

(A) GLOMERULAR NEPHROSIS

(1) *Lipoid Nephrosis (Fig. 1).*—The number of documented cases of purely degenerative lesions of the glomeruli associated with hyperpermeability for albumin is sufficient to assure the existence of lipoid nephrosis as a disease *sui generis.* In spite of the fatty disorder of tubular epithelium which may be more conspicuous than structural changes in the glomeruli, it is the functional disorder of the latter that clearly predominates. Impairment of tubular function has not been demonstrated and it is highly disputable whether lack of tubular re-absorption for albumin plays any role in the massive daily proteinuria. The thickening of the glomerular capillary membranes may be due to a deposit of protein between its inner and outer layers. In no sense of the word is the term "membranous glomerulitis" applicable to such a lesion.

A membranous inflammation in the accepted terminology of general pathology indicates an exudative inflammatory process characterized by the formation of a membrane (fibrin). This, however, is not observed in the type of glomerular lesion under discussion. If the term is meant to denote the inflammation of a membrane, it is without analogy and would require redefinition of the term inflammation.

Lipoid nephrosis may be reversible or may be progressive. In the latter instance a characteristic hyalinization of glomeruli develops which was interpreted by Fahr as the end stage of an inflammatory process, although the inflammatory nature of the process was assumed only by inference. Ellis and his coworkers, however, have shown that evidence of inflammation in the development of this lesion and infection in the natural history of this disease are conspicuous by their absence. It is evident, therefore, that Ellis' so-called Type II nephritis constitutes in reality the chronic form of a progressive lipoid nephrosis. Renal insufficiency and hypertension are looked upon as late superimposed sequelae.

A glomerulonephrosis of the same type, but usually in focal distribution, is often superimposed upon true glomerulonephritis. Many stages and degrees of such lesions can be observed.

Fahr recognized the existence of a pure "intracapillary" glomerulonephritis but argued that it could not be separated from the more common extracapillary form because mixtures of both can frequently be observed. We agree with Ellis that pure intracapillary glomerulonephritis is fundamentally different from extracapillary glomerulonephritis but interpret the former as chronic lipoid nephrosis. From this point of view, mixtures resolve themselves as common extracapillary glomerulitis with superimposed chronic glomerulonephroses representing the morphologic counterpart to the clinical concept of nephritis with "nephrotic Einschlag" (component).

(2) *Amyloid Nephrosis (Fig. 2).*—Amyloid

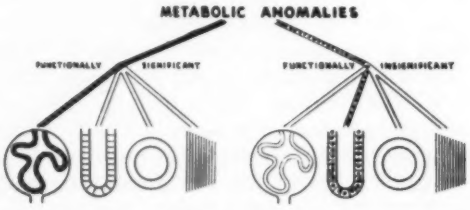

FIG. 1

Lipoid nephrosis. Symbols represent from left to right: glomeruli, tubules, vessels, interstices. Continuous line means functionally significant. Dotted line means functionally insignificant. Sequelae are not indicated.

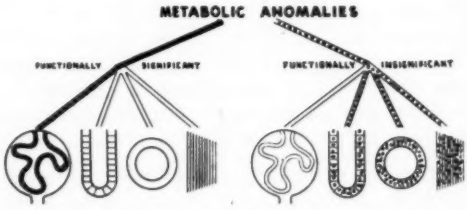

FIG. 2

Amyloid nephrosis. Symbols represent from left to right: glomeruli, tubules, vessels, interstices. Continuous line means functionally significant. Dotted line means functionally insignificant. Sequelae are not indicated.

may be deposited in all anatomical structures and from a morphologic point of view none is predominant. The only change which is of functional significance takes place in the glomerulus (nephrotic syndrome). Renal involvement in generalized amyloidosis is for this reason placed under glomerulonephrosis. The amyloid deposits in other parts of the kidney are functionally insignificant.

The picture may become quite complicated if impairment of circulation results in late phases of the disease. Subsequent changes, including even degenerative glomerulitides, referable to these sequelae, in so-called "amyloid contraction" are considered to be superimposed.

(3) *Gestation Nephrosis.*—The term gestation nephrosis refers only to that type of renal lesion during pregnancy which is manifested by a nephrotic syndrome, and the associated purely degenerative change of glomerular capillary membrane. It may occur in its pure form even in presence of hypertension and the morphologic lesion under such conditions may be suggestive of the systemic disease but is not pathognomonic. It closely resembles lipoid nephrosis.

Eclampsia *(Fig. 3)*, however, may be associated with a second set of clinico-pathologic changes referable to the vascular system, manifested by arteriolar spasm. If, therefore, glomerulonephrosis is found in a kidney in conjunction with foci of tubular degeneration, ischemic necroses and hemorrhages, the combination strongly suggests that eclampsia is responsible for the morphologic changes observed in the kidney. We are, however, as yet unable to relate pathogenetically the glomerular and vascular degenerative changes directly, and both are, therefore, listed separately as functionally significant lesions.

(4) *Intercapillary Glomerulonephrosis.*—The only renal lesion in intercapillary glomerulosclerosis specifically referable to a functional disorder is the deposition of hyalin-like material associated with diabetes and loss of albumin. The glomerular changes are invariably present in diabetes with nephrotic syndrome and are therefore placed into the order of glomerulonephroses. In a large percentage of cases, however, particularly in the old age groups, intercapillary glomerulosclerosis is not associated with nephrosis. We can only surmise that the focal glomerular changes in these instances are associated with hyperpermeability for albumin. This may not be sufficiently extensive to result in manifestations of a nephrotic syndrome.

Aside from these lesions, diabetes may affect the kidney in many different ways. The appearance of glycogen in certain tubular segments, benign nephrosclerosis, manifestations of hypertensive uremia, and necrotizing papillitis may, or may not be found in conjunction with intercapillary glomerulosclerosis and are respectively listed as superimposed or concomitant lesions.

(5) *Wire-Loop Glomerulonephrosis (Fig. 4).*—This conspicuous degenerative lesion of the glomerular capillaries is designated as glomerulonephrosis not only because of the structural changes but because of its functional significance. Renal involvement, if present in lupus erythematosus, may resemble clinically glomerulonephritis. As a rule, however, there is no elevation of blood pressure and the nephrotic syndrome is predominant. The occurrence of red blood cells in the urine, if present, is probably due to focal necrosis of glomerular loops. There are, of course, other associated lesions, particularly those in smaller vessels; but all of them are

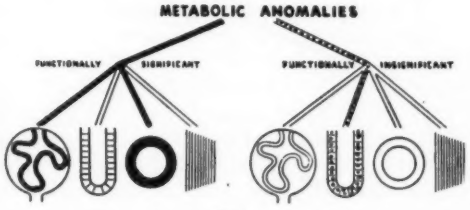

FIG. 3

Eclampsia. Symbols represent from left to right: glomeruli, tubules, vessels, interstices. Continuous line means functionally significant. Dotted line means functionally insignificant. Sequelae are not indicated.

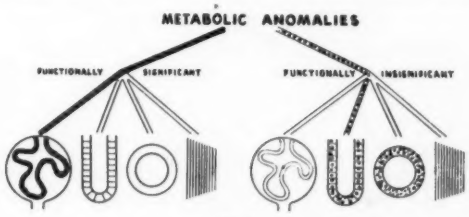

FIG. 4

Wire-loop glomerular nephrosis. Symbols represent from left to right: glomeruli, tubules, vessels, interstices. Continuous line means functionally significant. Dotted line means functionally insignificant. Sequelae are not indicated.

focal in distribution and not related to impairment of renal function. The only, at least functionally, consistent morphologic disorder is the glomerulonephrosis.

(6) *Stasis Nephrosis.*—Thrombosis of renal veins in adults may result in the complete picture of a nephrotic syndrome. Hyperpermeability of glomerular capillaries must, therefore, be assumed. In this instance we are dealing with a functional degeneration not associated with any significant morphologic changes.

(B) TUBULAR NEPHROSES

The morphologic criteria are not so definitive as those of glomerular nephroses. In some instances, however, they may permit the recognition of the type of functional disorder with which they are associated. This holds true particularly for the group of lesions for which we apply the term "functionally nonspecific tubular nephroses." Most functionally specific types fail to reveal identifiable structural abnormalities.

(1) *Functionally Non-Specific Tubular Nephroses (Fig. 5).*—This type of tubular nephrosis is characterized by decreased renal circulation and unselected tubular re-absorption resulting in oliguria, anuria, and azotemia. The morphologic manifestations are variable, but if fully developed, two patterns can be distinguished.

(a) *Endogenous Type.*—This type of tubular nephrosis does not seem to be confined to any one specific segment of the tubules. They may reveal varying degrees of degenerative changes, including necrosis. Disturbances of enzymatic activity may be the only demonstrable alteration in some segments. Often the most striking feature is acute tubular dilatation with flattening of epithelial cells. Minor degenerative changes in the glomeruli have been noticed but are apparently of little, if any, functional significance. In most instances there is also marked interstitial edema and inflammatory infiltration, particularly at the cortico-medullary junction. Although some, if not all, of the morphologic features may be absent at times, the characteristic tubular functional disturbances can in most instances be expected from histologic findings.

These changes are seen under many different conditions, most commonly related to shock, but they also occur in the course of infectious diseases. The etiology varies and the pathogenesis is yet obscure, although a decreased renal circulation due to vascular spasm is favored by many.

The term "endogenous" tubular nephrosis, is applied in contrast to the second type in which an exogenous toxin is known to be the etiologic factor.

(b) *Exogenous Type.*—The basic functional disorder is the same. Mercuric nephrosis, for instance, is characterized by reduced renal circulation, oliguria, and azotemia. In addition, however, the toxic agent destroys locally the tubular epithelial cells, thus resulting in extreme necrosis and often subsequent calcification. Tubular dilatation and interstitial serous inflammation may occur in the early stages.

(2) *Functionally Specific Tubular Nephroses.*—None of these functionally specific disorders can be recognized morphologically, yet they are listed as nephroses, which we define as a metabolic anomaly incompatible with normal function. The order of "salt losing" nephrosis has been given a tentative place, although this seemingly specific functional disorder has not been adequately confirmed.

(C) VASCULAR NEPHROSES *(Fig. 6)*

Impairment of renal circulation may affect

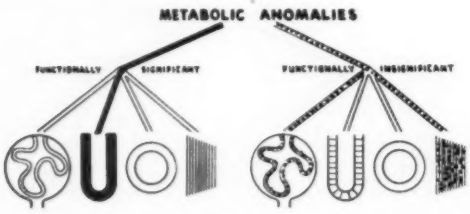

FIG. 5

Tubular nephrosis. Symbols represent from left to right: glomeruli, tubules, vessels, interstices. Continuous line means functionally significant. Dotted line means functionally insignificant. Sequelae are not indicated.

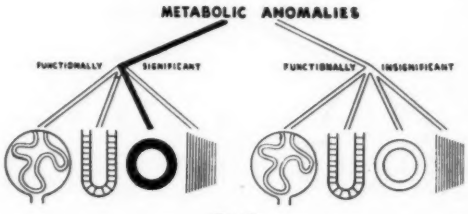

FIG. 6

Vascular nephroses. Symbols represent from left to right: glomeruli, tubules, vessels, interstices. Continuous line means functionally significant. Dotted line means functionally insignificant. Sequelae are not indicated.

the systemic circulation as well as the renal function as excretory organ. If an abnormal state of metabolism within the vessel wall decreases the renal circulation below the threshhold of compatibility, we classify the lesion as a vascular nephrosis. It is irrelevant for this consideration whether the vascular lesions are intrinsic or extrinsic, whether they are humeral or neurogenic, whether they are manifested by hypertonicity or spasm, or whether they result in visible structural changes.

It is important, however, to state specifically that these vascular lesions fall under the category of nephrosis only if they are sufficiently severe and diffuse to affect the systemic circulation. The entire concept of vascular nephroses may, therefore, be equivocal. One may prefer to classify all these changes as functionally insignificant metabolic disorders. It is my own opinion, however, that extrarenal hypertension may result in permanent damage of the renal vascular tree, terminating in renal hypertension. It is this stage to which I refer as vascular nephrosis.

Morphologic evidence of this stage is for the most part indirect. In the case of benign nephrosclerosis, the diffuseness of arteriolar degeneration may be helpful in conjunction with cardiac hypertrophy. In malignant nephrosclerosis, subendothelial proliferation and arteriolar necrosis with secondary damage to tubules and glomeruli are usually pathognomonic. Pure vascular spasm can be inferred only from massive or focal cortical necrosis and secondary focal necrosis of vessel walls with or without thrombi.

Subsequent to longstanding nephrosclerosis, scarring of renal parenchyma may result in excretory renal insufficiency. For some time tubular hyperplasia can compensate for the lack of function of lost nephra provided a sufficient volume of blood circulates through the kidney, but the process may advance to a point of exhaustion of renal reserve power. To this phase Fahr applied the term decompensated nephrosclerosis characterized by impairment of renal function or uremia. This condition may be recognized in many instances by the finding of severe and diffuse arteriosclerosis, conspicuous hyperplasia of remaining cortical tubules and the occurrence of focal degenerative glomerulitides.

Nephroscleroses, in Fahr's opinion, were primary renal lesions and as such the cause of hypertension. He looked upon benign nephrosclerosis as a degenerative vascular change and upon malignant nephrosclerosis as an inflammatory lesion. We have come to recognize both as results of extra-renal hypertension and have come to use the term nephrosclerosis to describe only the renal changes which indicate that the hypertension has become irreversible, that is, renal in origin. We have also come to realize that the inflammatory vascular lesions in malignant nephrosclerosis are secondary to arteriolar spasm and necrosis. Hence, we include them under vascular nephroses.

METABOLIC DISORDERS, FUNCTIONALLY INSIGNIFICANT

These lesions, by definition, are not included in the category of nephrosis. The appearance of fat, glycogen, hyaline droplets, bile, and so on, in epithelial cells may result in injuries to individual cells or cell groups but is not known to impair the tubular function to a recognizable degree. For the sake of clarity and consistency, the term nephrosis, such as bile nephrosis, hemoglobin nephrosis, and so on, must be eliminated. If tubular nephrosis occurs in such cases, it does not result from the excretion or absorption of any of these substances but is directly related to the underlying systemic disorder.

SUMMARY

The classification here presented is based upon an integration of morphology and function. Each disease is defined by applying the concepts of general pathology, general physiology, special pathology, and special physiology in an alternating progressive manner. Within this system the order of nephrosis is recognized as a functionally significant metabolic anomaly.

This principle can be applied in similar fashion to other concepts of general pathology, particularly to inflammatory lesions, where the functional significance generally parallels the extent of involvement. The practical usefulness of this method of classification becomes apparent wherever the morphologically minded pathologist finds himself in conflict with the physiologic perspective of the clinician.

PRE- AND POSTOPERATIVE CARE IN PROCTOLOGY*

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The ultimate goal of every proctologist is to attain sufficient knowledge and skill to take his patients through the course of proctologic surgery with a definite minimum of pain and discomfort and to shorten the postoperative time to a complete cure.

The primary reasons why patients present themselves to a proctologist are that they have pain, anorectal bleeding, protruding masses, constipation, diarrhea, and last but not least, the inherent fear of cancer. It is necessary that the physician take sufficient time and care in eliciting a history of the chief complaints, the past history of surgery and illness, and the subjective findings of each patient. Following the history the patient should then receive a very careful examination of the anorectal area, and no rectal examination should be considered complete without a thorough proctosigmoidoscopic study. If the patient at the time of examination is having anal spasticity and pain, it is best to apply an anesthetic jelly to the anal canal which gives immediate anesthesia and anal relaxation for at least twenty minutes. Patients truly appreciate this relief of pain and a more complete and satisfactory examination can be made. If the patient has not been suitably prepared for the latter examination arrangements should be made for another visit in the near future. By this the proctologist may protect himself against overlooking lesions in the upper portion of the rectum and lower sigmoid, and also gain the confidence of the patient who will realize that the doctor is thorough and complete in his examinations. Following the digital, anorectal, and proctosigmoidoscopic examinations if no cancer or tumors are found it is very important to explain to the patient that no such tissues have been encountered. It usually will be found to be a great source of relief to the patient to hear this. If malignancy is found it is felt that it is best to explain to the patient that the lesions exist and no time should be lost in relieving the condition. It has been found of great value to have suitable pictures and illustrations of anorectal lesions available in explaining to the patient the conditions which exist in his or her case. This makes for a better understanding between the patient and the doctor and conditions and reasons for the outlined treatment are much better understood. It also goes far in helping to gain the confidence of the patient and giving him an understanding of his condition. Too many doctors apparently take for granted that the patient understands medical terminology and the scientific explanation of pathological conditions as well as the doctor himself. This is a mistake and leads to confusion on the patient's part. It is not an overestimation to say that confidence is 50 per cent of cure and results.

Many papers have been based on questionnaires sent to proctologists throughout this country and there can be no doubt that there is a definite unification to a certain degree as to the accepted pre- and postoperative treatment of proctologic procedures. Even so, we all have our various little quirks and ideas which in our own hands seem to work most satisfactorily. It is only through the suggestions and statements concerning the various procedures that we may learn of what has been successful for others, and when this knowledge is incorporated in our own routine procedures it may be of great benefit both to the patient and ourselves. It is taken for granted that no patient admitted to one of our hospitals today is taken to operation before at least a complete blood count, bleeding time, coagulation rate, urinalysis, and probably serologic tests have been made. These essential laboratory procedures should most certainly be on record before a surgical condition is treated. The preoperative treatment found most successful in our hands consists of the following:

(1) Enemas. It is felt that the patient should receive at least two cleansing saline enemas the night before operation. On the following morning, he should have one enema or at least enemas until the return is clear. Even in acute, painful, spastic anal inflammations satisfactory and more or less painless enemas can be given by the use of a small catheter attached to the rectal tip, the catheter being well lubricated. Cleanliness of the rectum and anal canal is of too great importance both to the patient

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and the surgeon to be omitted in the preoperative treatment.

(2) There is some discussion as to the shaving and preparation of the patient, yet it is felt that shaving of the perianal region should be done to prevent the possibility of infection and the suturing of hair shafts into incised and sutured areas. In all patients the perianal areas are either shaved or the hair is clipped with scissors close to the skin surface before operation.

(3) The patients should be given suitable sedatives the night before an operation and preoperatively in order to minimize fear and nervous apprehension. Over-sedation should not be used and each patient should be studied as an individual and not treated in a routine manner as far as sedation is concerned. At the time of the discussion of the patient's condition and the treatment advocated it is most important to discuss the desired anesthetic. It is felt that the patient should be allowed to make his or her decision as to a spinal or general type of anesthetic, and again, the patient's physical and mental make-up should be studied to determine the type of anesthetic best suited for his case. It has been found that if a patient has a fear of a spinal or local type of anesthetic and later has a postoperative headache or low backache he is definitely inclined to blame the anesthetic for the condition. If the patient has been given the right to choose his anesthetic and later has any of the above symptoms or findings, he better accepts the condition and no one is blamed because of his having been forced into taking a certain type of anesthetic. During the past two years a study has been made concerning the use of antibiotics preoperatively such as sulfasuxidine or sulfathalidine in the relief or minimizing of postoperative pain and discomfort. There have been no consistent or satisfactory reasons or findings elicited to advocate the use of these chemotherapeutic agents as a preoperative measure. During the past two months dramamine® in dosage of 50 mg. by mouth has been given two hours previous to operation and 50 mg. by hypodermic has been given immediately after surgery. This has been found to be of great value in the prevention of nausea and vomiting during the spinal anesthetic and following a general anesthetic.

We, as operative surgeons in proctology, should never let ourselves become so self-satisfied and so confident in our surgery that we neglect to try constantly to improve our surgical technic. Good surgery calls for the ability to decrease trauma to tissues, and especially in proctologic surgery to reduce postoperative edema which is the cause of much postoperative pain. Much has been written and discussed as to the use of long-lasting anesthetic preparations at the time of operation or immediately following it. Apparently the oil-soluble preparations such as zylcaine® or a water-miscible solution such as efocaine® has met with widespread acceptance and use. If the surgeon employs either or both and has found that there has been no undue irritation, inflammation, or abscess formation resulting from their administration the continued use is endorsed. The effects of the medication vary in individuals. Even so, be it ever so meager, it is an important pain-relieving procedure. If the substances are used with care, the suggested directions are followed, and not too much of the solution is used at any one time, at least not over 10 cc., it is probable that it will not be a source of trouble. Following an anorectal operation, small gelfoam® pledgets are inserted into the anal canal. These act as hemostatic wedges, soon become soft and pliable, and do not cause pain from pressure. A very soft, rubber tube is inserted between the gelfoam® pledgets into the anal canal. This allows for the escaping of gas and the injection into the anus and rectum of warm oil or any other preparations the surgeon wishes to use postoperatively. The tube is so soft that it in itself causes no pressure and does not disturb the patient. Postoperative dressing should be made comfortable, as soft as possible, and yet have enough firmness to give the necessary pressure to the anal area. Many times a firm pressure to the anal area is more comfortable postoperatively than a soft, loose dressing.

The postoperative period in proctology is a most important time for both the patient and the surgeon. Extremes may be found in overtreatment and undertreatment of the patient during this time. If care has been taken in the preoperative preparation of the patient and in the handling of tissues at the time of operation the probability of pain and inflammation is minimized. The acute pain and distress immediately following operation should most certainly be looked after and the patient made as comfortable as possible, and here again each case must be individualized. The postoperative dressings should be removed the evening after the operation and hot, saline packs should be applied for a period of at least two hours, followed by a zinc oxide or furacin® dressing after the packs are removed. A full liquid diet is given on the evening after operation and the first day after. On the remaining days in the hospital a careful, soft diet is advocated. Mineral oil is given on the first postoperative night and again on the afternoon and evening of the

second postoperative day, followed by a saline enema the following morning if the patient has not had a satisfactory bowel movement from the mineral oil. Patients are encouraged to be up and out of bed on the second day and they usually feel better after moving around than if they remain in bed for the three or four days spent in the hospital after operation. As a rule, no other treatment is given than that listed which actually is a minimum; yet patients seem to feel better and make their own adjustments more easily without much interference by local applications of solutions or ointments into the anal canal. Patients are usually told that their postoperative time of healing will be between two and three weeks, depending upon the extent of the operation. They are advised to use hot sitz baths when returning home, and they are told to stay on soft, easily digested foods and to refrain from all roughage. Mineral oil is usually given each night for the first week and then the patient is changed to one of the bulk-forming laxatives. The patient is seen in the office on the sixth or seventh postoperative day at which time the anorectal area is thoroughly irrigated with witch hazel, the denuded, healing areas are treated with 1, 5, or 10 per cent silver nitrate solution, and one of the rectal ointments applied to the anal canal.

These suggestions as to pre- and postoperative care have proved to be successful in a large series of cases and have involved a minimum of treatment with a maximum of benefit to the patient.

OFFICE ORTHOPEDICS*

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Diseases and injuries of the musculoskeletal system which are seen in ambulatory patients are numerous and often appear among those seen in the office of the general practitioner. A correct working diagnosis is the most important step in treatment of such patients. This, in turn, is based upon a careful history and examination; of the two, perhaps a detailed history is the more important. Too much emphasis cannot be placed upon the necessity for concentrated, thoughtful questioning of the patient to gain information concerning his background, environment and activities as well as the immediate and past symptoms of which he complains. It has been my experience that nothing contributes so much towards a careful, thoughtful history as the act of recording it as it is being taken.

The examination begins with watching the patient disrobe. Much can be learned about the "compensation case" by watching the patient undress while diverting his attention by continuous questioning. With the patient undressed his age, height, weight, general posture and gait should be noted. Each of these factors often has just as much bearing upon complaints referable to the feet as upon those relating to the back or hips. For the purposes of this discussion further details of the examination of the various parts of the body must be omitted but it is well to remember the value of comparing the appearance and motion of an arm or a leg with that of the opposite extremity.

Upon completion of the physical examination one is frequently confronted with the need for roentgenographic and laboratory studies. These are usually available in or adjacent to the office building of most general practitioners. If they are to be useful, they must be done by competent technicians and the roentgenograms must be interpreted by an expert roentgenologist.

With the data obtained from these studies, the physician can usually establish a working diagnosis and thus consider the treatment that may be indicated. At this point it is important to avoid making a snap diagnosis by giving insufficient thought to all the factors involved. A few moments of quiet concentration upon the whole problem, no matter how pressing may be the claims of other patients, is essential.

Treatment should always be considered under the headings of general and local measures. General therapeutic measures should include first, interpretation to the patient of the working diagnosis in reasonably comprehensible, non-technical terms. Since most patients come to us with fear, it behooves us first to reassure them as far as possible. To

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this end nothing is so helpful as the pronouncement of a definite working diagnosis in simple terms. Nowadays it is also usually essential to explain that the condition in hand has no relation to cancer, tuberculosis or rheumatoid arthritis, if this can be done.

Also under general measures is an explanation relating to the patient's activities, since we are always dealing with problems arising from the musculoskeletal system. Such instruction may vary from emphasis on complete bed rest to the other extreme of vigorous postural or weight bearing exercises. Bed rest for two hours at mid-day, avoidance of stooping and lifting, or use of crutches or a cane may be indicated and should be explained in detail. For those who are overweight, detailed discussion of a dietary regimen is essential.

Local measures are directed to care of the causative lesion, such as wounds, fractures or articular diseases, and will be discussed in more detail as they relate to specific problems. Physical therapy for relief of pain and restoration of function should also be considered as local measures. Simple treatments which can be carried out at home are often as valuable as those given by physical therapists but should be explained in detail and their value emphasized if the patient is to be expected to follow them. The technic of massage, if advised, should be demonstrated. Exercises should be carefully explained and the patient should be made to perform them under direction.

Medications are perhaps of least importance in the general therapeutic armamentarium of the orthopedist, but should never be forgotten. Sedatives, employed at the proper time, are most gratifying to the patient and should be liberally used. Specific remedies are few but colchicine for gout, myanesin (tolserol®) for muscle spasm and phenylbutazone (butazolidin®) for bursitis should be remembered.

Bursitis.—Acute subacromial bursitis, with or without calcified deposits in the bursa or tendinous cuff, sometimes may be relieved by injections of procaine hydrochloride. However, the success of this treatment depends upon accurate introduction of the needle into the tendinous focus so as to puncture the retaining membrane, relieve the tension and dissipate the calcified deposit. If the surgeon succeeds in penetrating the focus and rupturing the retaining membrane with the injection, the associated pain is usually relieved. Often, however, he fails and the patient then is more miserable than before. Therefore, one of several other treatments is usually adopted. Roentgen therapy combined with adequate sedation with opiates and the use of a sling often gives relief in the course of a few days. Daily administration of 200 mg. tablets of butazolidin® every four hours for four doses has given prompt relief in several recent cases. However, in the acute recurrent cases with calcified deposits we believe it advisable to operate, expose the focus, incise the tendon and remove the calcified deposits with a curette and by lavage.

The chronic "frozen shoulder" (adhesive capsulitis or peri-arthritis), with considerable limitation of abduction, and internal and external rotation of the shoulder, presents a different problem. Roentgen therapy, injections and even operative intervention seldom give rapid or lasting relief. The mainstay of treatment for such cases is patient and persistent stretching of adhesions by vigorous, voluntary exercises taken at frequent intervals each day. In addition, at least once each day, hot applications or diathermy should be administered to the shoulder muscles and followed by massage. The patient requires several weeks of such intensive treatment in order to regain even half of the lost motion and freedom from pain, and complete range of motion is seldom realized before several more months. However, practically all ultimately recover satisfactorily.

Ganglions.—The proverbial treatment for ganglion of the wrist was to rupture it by a smashing blow with the family Bible. Aspiration of the gelatinous contents through a large needle and production of multiple punctures of the ganglion wall, followed by use of a pressure dressing, have also been recommended. Both of these could be office procedures but the percentage of recurrences has been great enough to discredit them. Surgical excision, now considered the treatment of choice, requires hospital facilities.

Hypertrophic Arthritis of the Knee.—Intra-articular injections of hydrocortisone acetate (compound F) have been used during the past year for relief of the symptoms associated with

hypertrophic arthritis of the knee. The majority of patients so treated have been relieved of symptoms for periods varying from a few weeks to several months. This drug has proved less helpful, however, in other forms of hypertrophic arthritis and difficult to inject into joints other than the knee.

Static Foot Disorders.—Tenderness or a painful callus beneath a metatarsal head may be relieved by application of a felt pad to the sole of the foot just behind the metatarsal heads. A round pad should be made of one-half inch felt, three inches in diameter, bevelled at the edge. It should be held in place by strips of two-inch adhesive which encircle the metatarsal portion of the foot. Pain in the region of the longitudinal arch with tenderness over the plantar fascia also may be relieved by wearing of a similar felt pad shaped to fit the arch and bound to the foot with adhesive strips extending upwards along the sides of the ankle and leg much as they are applied for a sprained ankle.

Wounds.—Suture of clean incised wounds of the extremities, particularly those of the hands and feet, may be undertaken in an office where nursing assistance, sterile drapes and instruments are available. In deep lacerations often one or more muscles, tendons or nerves have been severed; therefore, before being sutured they should be carefully inspected to see that all voluntary movements of parts distal to the site of injury are preserved. When a severed nerve, tendon or muscle is recognized, the wound should be dressed and the patient sent to a hospital where the facilities are adequate for enlarging the exposure and performing careful anastomosis and closure. Severe lacerations of dirty hands or feet, before being sutured, require thorough cleansing and debridement and therefore should be treated in the hospital rather than the office.

Fractures.—Nearly all simple fractures without displacement can be suitably immobilized in an office where splints and plaster are available. Undisplaced fractures of bones of the digits, hand, wrist and forearm, and even those of the elbow, humerus and shoulder, may be so treated. Likewise many fractures of the feet, ankles and legs with no displacement may be properly splinted in the office but patients with fractures about the knee, femur or hip should be sent to a hospital for treatment after transportation splints have been applied.

Fractures of the head and neck of the humerus which are impacted or but slightly displaced do not require reduction and may be immobilized simply with a sling and body swathe. Early union without stiffness of the shoulder is more certain if a program of relaxed, voluntary movements is instituted after four or five days.

Displaced fractures of the hands, wrist or ankles may sometimes be reduced under local anesthesia and suitably splinted in an office. However, reductions so attempted are often unsuccessful and it is a safer general rule to refer all patients with displaced fractures to the hospital where a general anesthetic may be administered and postreduction roentgenograms may be promptly made.

Compound fractures, which nearly always require debridement and open reduction, should receive only emergency care and splinting in an office.

Patients with uncomplicated rib fractures may be made more comfortable by limiting their thoracic movements with strips of adhesive tape, an ace bandage or a canvas Sam Browne belt. Further relief may be provided by injection of the intercostal nerves proximal to the site of fracture with a 1 per cent solution of procaine hydrochloride or, for prolonged action, with a 4 per cent solution of bromsalizol.[18] The latter procedure requires skillful insertion of the needle to avoid puncture of the lung.

Greenstick fractures of the clavicle in children require only a protective dressing, which can be applied in an office. A Sayre or figure-of-eight bandage applied to the two shoulders with an ace bandage and combined with a sling will suffice. Even displaced fractures of the clavicle can often be reduced under local anesthesia and suitably splinted with a clavicular cross or a Billington plaster yoke.

SPRAINS

Ankle.—After preliminary examination including roentgenography to rule out a fracture, the foot and leg should be prepared for the application of adhesive and cleansed and

draped for the injection of procaine. The operator should then palpate carefully to locate the acutely sensitive points over articular ligaments and capsule. At each tender point the needle should be introduced into the capsule or ligament and 0.5 to 1 cc. of a 1 per cent solution slowly injected. After all tender points have been infiltrated, the ankle should be strapped in a position to relax the injured ligaments. An elastic bandage should be applied over the adhesive and carried up about the calf of the leg.

Severe sprains can be recognized by extensive ecchymosis, rapid and extensive swelling, and sometimes after injection, by abdominal mobility. Such ankles should be immobilized in plaster for two or three weeks before weight bearing is permitted.

The slightly or moderately sprained knee, as indicated by local swelling and tenderness over one of the principal supporting ligaments, may be injected, strapped and bandaged, and limited weight bearing permitted as swelling and pain subside. In the acute stage it is frequently difficult or impossible to differentiate a sprain from a torn and displaced semilunar cartilage but the latter condition is suggested when the knee fails to extend fully after the tender ligaments have been infiltrated. Severely sprained knees with hemarthrosis and perhaps abnormal lateral mobility should be immobilized in plaster after the bloody articular fluid has been aspirated.

The sprained back presents the same problems as those of the sprained ankle and knee, complicated, however, by the fact that swelling, ecchymosis and well localized tenderness are deeper and less obvious. It therefore becomes more difficult to establish the precise location of the small, sprained articulation and its supporting ligaments and to judge the severity of the injury. However, the pain and tenderness are usually evident enough to direct the injection of procaine. The objective is to infiltrate the interspinous and interlaminal ligaments and, if possible, the capsule of the articular facets. The fascia and tendinous origins of the erector spinae should also be infiltrated if there are multiple tender points. Following the injection adhesive strapping may be applied in mild cases and limited activity permitted. However, in those sprains judged to be severe, bed rest on a firm mattress is indicated and should be continued until the patient can move about in bed and sit up with little or no pain. Then, and only then, should activity be permitted, preferably with the support of a well fitted corset combined wih application of heat and massage.

Low Back and Sciatic Pain.—Before the ruptured or protruded intervertebral disk was recognized as a clinical entity, many attempted to arrest sciatic pain by injecting the nerve at the sciatic notch or by introducing the solution of procaine hydrochloride into the sacral canal. These procedures usually were unsuccessful because, as we now recognize, the solution was introduced peripheral to the site of actual root pressure. In view of our present knowledge of the origin of sciatic pain, there seems to be little reason to expect to relieve it by any type of injection.

Manipulative procedures for relief of low back and sciatic pain have been popularized by the osteopaths and used to a limited extent by some of the medical profession. Undoubtedly, they give temporary relief in some cases and complete remission of symptoms in others. Manipulations are contraindicated in the presence of an active inflammatory lesion, a tumor of the spine or a fractured pedicle, but when these have been excluded by roentgenographic studies, there remains a logical though limited application of this procedure. Although patients often tell us that they felt "something slip" in the lower part of the back, and it feels as if there is still "something out of place," we know from the roentgenograms that an actual dislocation or demonstrable subluxation does not exist. Therefore, a manipulative procedure designed to reduce a dislocation or subluxation of the sacroiliac lumbosacral joints is illogical. We know, however, that unilateral muscle spasm usually dominates the clinical picture in such cases. We know, too, that as preliminary steps, the osteopath carefully positions the patient so as to relax the tense dorsal muscles and spends some time administering heat and massage to obtain further relaxation. It therefore seems probable that the manipulations which are performed only after adequate relaxation has been obtained serve only to restore the normal range

of motion that was previously inhibited by the unilateral muscle spasm. Therefore, in thinking of such treatments, emphasis should be placed upon arrest of the muscle spasm by positioning and the application of heat and massage rather than the manipulative procedure. This probability seems more certain when we realize that often similar relief is obtained without manipulations simply by administration of an opiate, bed rest and heat, or by injections of a local anesthetic to relieve the muscle spasm.

Of the numerous manipulations recommended for low back pain, the maneuver most generally accepted by physicians who use them is based upon rotation of the pelvis and counter rotation of the shoulders with the patient prone.

Spinal Conditions Requiring Support.—A simple support for the neck which will limit flexion, extension and rotation is indicated for relief of muscle spasm and pain associated with torticollis, chronic arthritis, some shoulder-arm syndromes and the like. A modified Thomas collar of fiber board, felt, cotton and stockinette can be made in the office and is readily fitted and adjusted. Whereas it gives comfort in mild cases, it cannot replace the snug plaster or molded leather supports when complete fixation is required.

Supports for the joints and muscles of the lower part of the back vary from adhesive strapping, which provides only slight support, to the most complete fixation in plaster. For office use, adhesive strapping and corsets are most applicable. To be effective, all supports should limit motions of the lower portion of the back. Therefore, they should encircle the waist and extend high enough in back and front to prevent forward bending.

SUMMARY

The general practitioner sees many patients with conditions referable to the musculoskeletal system. The most important step in treatment is a correct working diagnosis, which is based upon information gathered from a careful history and physical examination, combined with roentgenographic and laboratory studies, when necessary. General therapeutic measures include interpretation to the patient of the working diagnosis and an explanation relative to the amount of physical activity permitted. Specific treatment is directed toward care of the particular condition encountered. The office management of some of the conditions commonly encountered is discussed.

DISCUSSION *(Abstract)*

Dr. R. Beverly Raney, Chapel Hill, N. C.—Office treatments common to the orthopedist and to the general practitioner are and should be legion. They concern all minor orthopedic affections and mild degrees of many additional orthopedic entities.

Unlike physicians with a wider viewpoint, orthopedic surgeons are likely to consider the patient as made up of three parts: spine, upper extremities, and lower extremities. As Dr. Caldwell has pointed out, many acutely painful conditions of the neck respond to a simple support. The Schantz cotton collar, which may be made up easily in the office, is often helpful. Chronic conditions of the neck may be treated effectively with simple head halter traction used at night, apparatus and instruction being given to the patient at his office visit. When acute low back pain is accompanied by sharply localized tenderness, the patient may receive prompt and sometimes lasting relief from procaine injection of trigger point or of tender fatty nodule, a simple office procedure, relatively safe when proper precautions are observed.

In the upper extremity, the painful shoulder may often be relieved by block of the suprascapular nerve with procaine or a similar agent of more prolonged action. At the elbow, the distended olecranon bursa responds to aspiration and the prevention of pressure, and radiohumeral subluxation in children is cured by a momentary manipulation. Early or mild phases of DeQuervain's tenosynovitis in adults, and of trigger thumb in infants, sometimes respond to simple immobilization. Baseball or dropped fingers are effectively treated by support in the proper position with malleable metal splints.

Many painful affections of the lower extremities, such as degenerative arthritis of hip or knee, may be relieved by home traction at night, after the necessary apparatus and instruction have been given to the patient in the office. Numerous indeed are the disabling affections of knee, ankle and foot which respond to heel or sole elevations, arch supports, corrective adhesive strapping, and pads for the relief of localized pressure.

A large group of more complex orthopedic entities cannot be treated effectively in the office. In such conditions, however, office procedures frequently accomplish two useful objects: they relieve the patient's outstanding symptoms until more specialized facilities for diagnosis and treatment can be made available, and they serve as therapeutic tests of the need for hospitalization and, perhaps, for orthopedic surgical measures.

AN INTRODUCTION TO THE PROBLEM OF THE ALCOHOLIC*

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Despite the title of this paper, "An Introduction to the Problem of the Alcoholic," it is generally accepted that there is no alcoholic *per se*. Of greater significance, there is no alcoholism as such. Instead, there are thousands of friendly, cooperative people who recognize that they should not drink alcohol but admit their inability to refrain from its use.

The problem of alcoholism is divided into three parts: (1) the etiological factors creating the situation; (2) the treatment of acute alcoholic intoxication; (3) the treatment of withdrawal symptoms or the hangover. When one contemplates the alcohol addict, it is especially significant that consumption of alcohol has been an almost universal phenomenon. There is scarcely a culture that has not used fermenting beverages to some extent. However, addiction as a social problem has, up until the present, been virtually unknown in many civilizations. It is because of this widespread use and the dangers implied therein that the interest of many organizations has been aroused, including the Licensed Beverage Industries, Inc., the Metropolitan Life Insurance Company, the United States Public Health Service, Consolidated Edison of New York, DuPont de Nemours, together with certain of our state governments, such as those in Connecticut, New Hampshire, New York, Oregon, Utah, Virginia and Wisconsin. The National Committee on Alcoholism is now in its seventh year of activity and cites continued progress in this field.

The reasons for drinking, as stated by the patients, may generally be treated as endogenous or exogenous. Such factors as feeling of insecurity, loneliness, tension, insomnia, self-consciousness, dissatisfaction with physical make-up and with own achievements are all phrases which appear frequently in histories of patients. Exogenous factors such as increased responsibility, world situations, the birth of children, deaths in the family, business problems, marriage, financial stress, loss of money or marriage of children are mentioned frequently. Close mother attachment, overindulgent mother, close parental attachment and friction with family, appear in many of the patients; and sexual maladjustment was regarded as an important factor in a number. Other terms which appear with frequent rapidity in case history taking are those of personality traits, sensitiveness, shyness, self-consciousness, inadequacy, insecurity, seclusiveness, timidity, anxiousness, rigidity, moodiness. Also are found such etiological factors as social inability, hypochondriasis, compulsion and obsession, enuresis and eating problems. Of interest are traits such as gambling, temper tantrums and behavior problems together with overt homosexual practices in a few cases.

It is a feeling of some that the use of alcohol is engendered by the same factors that lead the patient to the use of opium, morphine, barbiturates or other narcotics. They feel that its widespread use is due to the availability of the drug; and one psychiatrist entertains an interesting thought that were this habit not to be associated with loss of motivation, it would represent an easy solution for the escapist needs of its users. However, in this loss of motivation, he likens it to the importation of huge quantities of opium into China and its free use by the populace which also led to mass loss of motivation and therefore, then, failure of the country to have the desire to defend itself. More broadly speaking, this line of reasoning would tend to prove that the problem of alcoholism has little to do with CH_3CH_2OH but rather with the problems of the individuals who utilize the anesthesia that the drug produces.

Another theory, voiced in Dr. William's book on "Nutrition and Alcoholism" concerns reasoning that alcoholism stems from both an inborn or hereditary trait and a nutritional deficiency. Still another theory, Smith's investigation of alcoholism as a metabolic disease associated with some degree of adrenal cortical insufficiency, has not as yet produced any important confirmatory contribution.

To reorganize all these individual lives of alcoholics there is no single therapy. The public clinic by coordinating the activities of the psychiatrist, the internist, the psycholo-

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gist, and psychiatrically trained worker; by using the services of hospital and laboratory facilities and consultants in other fields, can approach the problem with a range of diagnostic and remedial skills capable of dealing with the individual differences of the alcoholic. This formulation bears slight resemblance to those of the sin and apple schools. We have come a long way.

The treatment of the habit state embodies, today, an older method known as the conditioned-reflex-aversion method utilizing emetine, apomorphine, and even a newer one, tetraethylthiurimide sulphide, commonly known as antabuse,® which since October 1951 has been approved by the government and is now for sale on physicians' prescription. French investigators claim the best all around results with ethyl alcohol extracted liver glucose solution, claiming that it depresses the addict's craving for liquor. All French writers emphasize the need for psychotherapy together with these methods.

It is the feeling of Dr. Carl Menninger of Topeka, Kansas that in the treatment of all mental ills, hope and optimism must be offered the patient. If this cannot be, it is the duty of the therapist to withdraw his obligation to the patient and to refer him elsewhere for treatment. It is felt that the conditioned-reflex-aversion method, regardless of how utilized must be combined with psychotherapy, a psychological survey, and sociologic adjustment.

Alcoholics Anonymous has served a purpose far greater than that of any other single agency to date. Its modus opperandi will be discussed in another paper, but from this writer's viewpoint it is the encouragement, humility, fellowship, understanding and optimism offered by this group to the alcoholic that is beneficial.

The treatment of acute alcoholic intoxication has to do with the intravenous infusion of glucose together with vitamins C, B_1, B_{12} and sedation. With such management the acute alcoholic intoxication can usually be coped with. Should depression of the respiratory center be a predominant factor, oxygen and artificial respiration must be employed.

The treatment of the withdrawal symptoms, or the hangover, has to date been entirely unsatisfactory, since no treatment is effective. The headache, nausea, emesis, nervousness, queasiness, and irritability are commonly accepted symptoms of the "morning following the night before." The number of therapeutic measures employed are limited only by the number of hangovers. Each individual has his own theories regarding the cure of this acute state. These treatments vary from the ingestion of large amounts of tomato juice mixed with A-1 sauce through the gamut to the point of prayer that the world will quickly come to an end. None of these methods is outstandingly successful. Sedation, sleep, and the correction of depletion of glucose in the body are the goals most sought for by the therapist. It is interesting to note that it is at this time that the patient is most susceptible to suggestion that more permanent aversion therapy be instituted.

The problem of the alcoholic addict singularly falls in the realm of general practice. It is the family physician who usually is consulted. The responsibility of the practitioner is not one to be taken lightly. It is his understanding of human frailty, his sympathy for his fellow man, his understanding of the problems that beset the species homo sapiens, that make his shoulders broad enough to sustain him who cannot sustain himself.

With the ever-increasing number of patients who seek aid when confronted by the problem of alcohol addiction, it behooves the family physician to evaluate more carefully the problems of humanity. His understanding, his humility, his acceptance of the role of God's healer on earth, will bring him closer to the realization, "There, but for the grace of God, go I."

THE USE OF ANTABUSE® IN THE ALCOHOLIC PROBLEM*

By JOHN J. MCANDREW, M.D.
Miami, Florida

A better title of this presentation might be "The Use of Antabuse® to Assist in the Re-

*Read in Section on General Practice, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

vealing of Disorders that are Concealed by the Excessive Use of Alcohol." For, with antabuse® is achieved just one purpose, and that is the chemically enforced sobriety of the patient.

Alcohol, from a psychiatric standpoint, must be regarded as a mask behind which the neurotic and the immature hide. Alcohol is also a means by which the borderline psychotic often eludes detection.

Alcoholism is not a disease. It is a symptom. It is a symptom of underlying personality disorder. There is first, the drinker who attempts to increase appetite, promote conversation, and to fulfill his needs when in the company of others. That is the so-called social drinker. Upon occasion he may imbibe too much and become a joy or a nuisance or both, but that is the extent of it. There is secondly, the individual who drinks almost every day without respect to social or convivial functions and who may or may not be missing from work for periods of time, or who may remain semi-intoxicated practically all of the time in order to maintain the dissolution of his internal conflicts. That is the drunkard. The third type is the true alcoholic or alcohol addict. This is the individual whom you may see socially as the total abstainer; for if a man does not take a drink at all, he is either a teetotaler or an alcoholic or both. For the alcoholic becomes addicted to alcohol almost upon his first swallow and once he starts drinking, he cannot stop without going through a postaddictive withdrawal state. There appears to be in this addiction as in other addictions a physical problem of deranged physiology for disturbed function in addition to the psychic and emotional dependency upon the drug.

It was quite natural that any drug that caused an excessive drinker to become sick instead of drunk would be received with interest. Such a drug is antabuse.®

Antabuse® is a commercial name for tetraethylthiuram disulfide. Historically, it was first brought to attention when it was found that this drug decreased the tolerance for alcohol in those exposed to it in the rubber industry. In Europe, particularly in Denmark and Sweden, it was used as an anthelmintic. Patients on this drug, under treatment for worms, had a moderately severe and disagreeable physical reaction after contact with alcohol. This property of clinical antagonism with alcohol was exploited medically in those countries, particularly Denmark.

It was introduced in this country a very few years ago and for the past year or so has been available on prescription only, after two years of investigation and final sanction by the Pure Food and Drug Administration.* The original studies upon its relation to alcohol were done by three Danish workers, Doctors Martenson-Larsen, Erick Jacobson and Jens Hald.

Commercially, this drug comes in tablet form. The tablet is cross-creased so that it may be divided into four parts with fair accuracy and ease. It is a large tablet and contains 0.5 gram of antabuse.® It is probably not because of the degree of perfection in swallowing attained by these patients, but they experience no difficulty in taking this large tablet. The pharmacology and physiological action of antabuse® are not fully understood. It is thought to be excreted into the feces at the rate of approximately a gram a day. It is further thought to be excreted through the biliary tract.

Physiologically, antabuse® interferes with the normal metabolic breakdown of alcohol in the body. One of the products of alcohol oxidation in the body is acetaldehyde. This is not an end product, rather the formation of acetaldehyde is a product of incomplete alcohol oxidation. Specifically, there is thought to be an inhibition of the xanthine oxidase enzyme so that the enzymatic oxidation of alcohol is incomplete. With the oxidation of alcohol arrested at the acetaldehyde level, it is easily seen that there is a remarkable rise in serum acetaldehye. The clinical picture is that of acetaldehyde poisoning with phenomena of body flushing, cardiac palpitation, fall in blood pressure, headache, vomiting, dyspnea with hyperventilation and, finally, exhaustion and collapse. This picture can be reproduced by giving acetaldehyde intravenously. This has been done.

Antabuse® therapy is designed to produce a certain amount of this clinical picture in conjunction with alcohol without endangering the patient's life if he should drink. In my hands before antabuse® administration the patient must be alcohol-free for at least one

*It is commercially prepared by Ayerst, McKenna and Harrison.

week. Hospitalization may be necessary to achieve this status. Antabuse® administration, at first, with each new patient, must be empirical. My present program usually is four tablets on the initial day, giving him one first, in order to determine the presence or absence of any undue sensitivity or reaction. Once this lack of sensitivity is established, then all daily dosages are given at one time on the day of administration. The first day, in the average sized adult, four tablets are given. The next day, three tablets are given. The next day, two tablets are given. Then a tablet a day is used after that. After a week or so of drug administration, the patient is given an alcohol test to determine the degree of intolerance for alcohol produced. Some investigators, particularly Fox in New York, recommend a dosage of antabuse® of simply one tablet daily for ten to fourteen days, or approximately two weeks, then a test with alcohol.

My alcohol test is as follows: one ounce of whiskey, the patient's own brand if possible, is used in the test. The patient is placed in bed and he drinks one-half ounce of whiskey slowly. A nurse remains in constant attendance with frequent blood pressure recordings, the cuff to be left on. If no undue reaction is noted, in one-half hour the remaining one-half ounce is given the patient and he is observed again. If the reaction has been sufficiently disagreeable, without undue clinical alarm, then the dosage is as it should be. After this test, dosage can be regulated with subsequent alcohol tests at intervals of a month or two to determine the clinical response to the dosage change. It has been my practice to repeat the test in a month or so even without necessary change in dosage, for there may be physiological change within the individual from time to time. On the more severe side, I have had no reaction that did not respond to the intravenous use of vitamin C, small dosages of atropine or epinephrine and oxygen administration. Most reactions are of a circulatory variety and primary attention is directed toward the cardiac status of the patient. Size and weight of the patient are dosage considerations.

Medical contraindications are myocardial disease or failure, advanced hypertension, diabetes, epilepsy, nephritis, thyroid disorders of severity, advanced liver cirrhosis, pregnancy and paraldehyde addiction. Medically, as can be seen, these people require a fairly complete work-up. The importance of some side effects clinically of the drug itself are sedation, decreased libido and some mild gastro-intestinal disturbances. Practically all can be controlled by dosage regulation.

Psychiatric evaluation of these patients prior to antabuse® administration cannot be too much stressed. It is of the utmost importance in giving this drug. It must be remembered that people drink many times because they cannot stand or withstand sobriety. And whenever we listen to someone say, and say conscientiously, if only so and so would stop his drinking, the implications are that he would be better. But the facts are that he might be very much worse. The ability of the patient to accept this type of treatment does not necessarily depend upon his own conscious mechanisms. For example, traumatic childhoods may prevent some from accepting the symbolic therapeutic figure of antabuse® as a parent substitute.

It must be remembered that antabuse® has a prolonged anti-alcohol effect when once instituted. This can last for two or more weeks in some patients, but most certainly he cannot take a drink instead of his drug any given morning and get away with it. In this trap of sobriety he may be forced to utilize the very last defense of the personality, which is the psychotic reaction.

Definite psychiatric contraindications are any overt psychosis, the psychopathic personality, the borderline psychosis and mental deficiencies if pronounced, and the reason why I stress psychiatric evaluation is so that these disorders may be recognized even with a neurotic personality: that is, if they are hiding behind a psychoneurosis, which is presenting. Emotional immaturity is the biggest single finding in the personality of the excessive user of alcohol. That should be remembered in the handling of the individual on antabuse.® Emotionally, the physician is probably dealing with a child and children will play hookey. They should carry a card on their person with the physician's name and the fact of their taking this drug, with instructions for hospitalization, instead of imprisonment in the event of bizarre behavior.

Antabuse® should not be considered a substitute for any of the existing therapies. It

is rather an addition to them. It is an addition in that, in many cases, it may make specific care for the underlying personality disorder possible. There is a tremendous difference between the individual who is forcibly pushed away from alcohol by chemical or other means of incarceration, and the individual who finds inner tranquility and no longer requires alcohol as a solvent for his inner conflicts and who, by that tranquility, no longer requires antabuse® either, which does not dissolve any conflicts but merely sees to it, chemically, that the individual cannot use alcohol and dissolve them in that way. All of us who do psychiatry have found that in many cases our psychiatry could not compete with the corner saloon in making our patient feel better immediately. As Dorothy Parker once said, "Liquor is quicker." Our psychiatry is a slower process. Antabuse® helps us in psychiatry in that our care may be given the time it requires for possible effect. It also saves us the embarrassment, as has happened to all of us, of our patient's leaving our office and heading straight for the nearest bar. This face-saving function of antabuse® is, of course, not its main purpose.

In conclusion, antabuse® is a drug that may be used only with the patient's complete knowledge, agreement and understanding. Without the patient's endorsement of the program, there will be no program. In many patients, the urge to drink is present only at certain times. These times may not be too long in duration. These patients, at other times, may despise their use of alcohol. Such a patient is the ideal antabuse® candidate. Antabuse® should not be given to patients whose psychiatric illnesses require hospitalization procedures. It should be given only to those who are amenable to psychotherapy and who remain in the outside world.

Antabuse® has its dangers. They are few. There have been deaths reported, but deaths during antabuse® administration are not necessarily due to antabuse® administration. In my series, I have had no deaths so far and, in a review of the literature on the subject, it appears to me that deaths from antabuse® itself are few and far between and they have occurred only because the individual cannot stand the physical reaction because of cardiac difficulties or otherwise. They are not directly due to antabuse® itself in an otherwise physically healthy subject. According to Dr. Jewell, Medical Director of Ayerst, McKenna and Harrison, there are only two deaths on record where everything but antabuse® has been ruled out. Jewel says further that a safe statement would be, there are presently 25,000 antabuse® treated patients. Precaution should be taken by the therapist so that error will be on the side of too little antabuse,® as it can always be increased after alcohol testing or if the patient should decide to test himself. In my opinion, antabuse® is a safe drug when used at all judiciously. It must be remembered that it is only the means of introduction to the underlying disorder free from the mask of alcohol, and not the cure or solution of the disorder.

DISCUSSION *(Abstract)*

Question.—How are you positive the patient takes a daily dose of antabuse®?

Dr. Leonard L. Weil, Miami Beach, Fla.—You cannot be. There must be a desire on the part of the patient to continue taking the dose. As Dr. McAndrew pointed out, there is a period of time of two or more weeks during which this conditioned reflex is sometimes active, based upon saturation of the body with the drug, and for that period of time the revulsive symptoms will present themselves should the patient imbibe alcohol. There is no method to ascertain whether or not the patient has continued taking his medication.

Question.—Is a patient who is treated by antabuse® therapy plus psychotherapy ever emotionally stable enough to maintain sobriety after antabuse® is discontinued?

Dr. McAndrew.—First, a word regarding discontinuance of antabuse.® There have been patients on record on antabuse® for three to five years. Antabuse® in my hands at least, is directed with the thought of its ultimate discontinuance. Antabuse,® to me, serves the purpose for a time. There is always a possibility that the patient will relapse but the relapse is a psychiatric failure in treatment of underlying disorder, not an antabuse® failure.

There are different types of drinkers. If the individual is able to drink every day and stop at any particular time without withdrawal symptoms, he may drink again; he may take a social drink. In fact, in France and I believe in Switzerland, where drinking is a matter almost of necessity, wine and other alcoholic beverages are drunk as we drink water, possibly because of their water. A worker over there has even so regulated antabuse® dosage that the patient is able to take a glass of wine to toast the bride, or something like that, but in the event he takes two or three he will be sick. So on the Continent, where drinking is a matter of custom and almost necessity, people can be so regulated.

In Denmark, if a person is arrested and the crime is not too great, and occurred while he was under the

influence of drink, he is offered an alternative: he either goes to jail or takes antabuse.® That is going on in Denmark at the present time.

Insofar as being sure that a person will not drink again, I do not think any of us can ever be sure of anything.

Question.—How long can antabuse® be continued without any bad effects?

Dr. McAndrew.—That would, in my opinion, depend upon the dosage. If an individual is taking a small amount of antabuse,® let us say half a tablet to a tablet a day, I believe it could be continued indefinitely. People have been on it for three, four and five years, and have had no ill effects, and I never have seen any ill effects. I have had patients on it for almost two years, and ill effects did not occur.

Question.—When a patient complains of bad symptoms while taking antabuse,® do you not think the symptoms are often due to withdrawal of the liquor? How can you tell?

Dr. McAndrew.—In the true alcoholic picture, or picture of alcohol addiction, there is a withdrawal period, but it is not like morphine addiction. The withdrawal period is not quite so severe and it is not as long in duration, and I believe I mentioned in the paper that I make sure the withdrawal period is over with before I use antabuse.® I mentioned that the patient must have been alcohol-free for a week, and with the usual excessive drinker, if he has withdrawal, if he is an addict, the withdrawal period should be about over in a week.

Now, that is also being tested by Dr. Martenson-Larsen in Copenhagen, who is now in this country on a visit, and he is sponsoring a program of antabuse® for the treatment of the acute alcoholic, and it works something like this: he uses antabuse,® about 250 mg. a day, in conjunction with an antihistamine and the usual vitamin therapy, along with oxygen and glucose and other medication.

This is his point, apparently: why use sedatives if you can give antabuse® which causes acetaldehyde to be built up in the body? Acetaldehyde is a hypnotic and the only reason why it is not used itself, is that it is very irritating to mucous membranes if given orally.

In other words, after antabuse® the patient manufactures his own sedation, and Dr. Martenson-Larsen has very great hope for this.

After a certain period of time, I do not believe there would be any difficulty in distinguishing between antabuse® symptoms and withdrawal symptoms.

Question.—It has been my experience that reformed alcoholics are the unhappiest people in the world. How, then, do patients recovering by use of antabuse® find the tranquility which you mentioned in your paper?

Dr. McAndrew.—By psychiatric care. To repeat for just a moment, alcoholism is a symptom. Anything can intensify that symptom. The tranquility that I speak of is the dissolution of internal conflicts. If a man has conflicts, he may be aware of them or he may not be aware of them; they are conscious or they are subconscious. He dissolves them in alcohol. With successful psychiatric care, he has not those conflicts; he is tranquil; and alcohol is unnecessary.

SEXUAL PRECOCITY*

CASE REPORT

By RICHARD G. SKINNER, JR., M.D.
Jacksonville, Florida

Sexual precocity is a relatively uncommon disorder. Wilkins, in his book, "The Diagnosis and Treatment of Endocrine Disorders," says there are some 645 cases of sexual precocity recorded in the literature as of 1946. He divides them into the following groups: (1) neurogenic; (2) idiopathic activation of pituitary; (3) gonadal; (4) adrenal. This case is being presented as an example of the type due to the idiopathic activation of the pituitary.

The present case is H.C., a seven-year-old white boy who was first seen at the Duval Medical Center in the Emergency Room because of an injury to his hand. Because of his appearance, he was referred to the Pediatric Clinic.

As far as his mother knows, the family history is negative. There are no known cases of early infantile deaths, precocious puberty or pseudohermaphrodism. The mother is about five feet, five inches in height and the father five feet, ten inches. The four siblings are normal. The patient was born at home and the weight at two weeks was twelve pounds. He cut his first tooth at one year, walked at twenty-one months, talked at two years and began to develop pubic hair at two and a half years, at which time he also began to grow rapidly. Axillary hair began to grow at two and a half years.

He was breast fed until eighteen months of age, then began taking table food. He had had no childhood diseases or any significant illnesses. However, he still wets the bed occasionally at night.

On physical examination the boy was noted to be very well developed and quite muscular. He spoke with a deep adult voice and it was quite difficult to reconcile his appearance and voice with his chronologic age. The skin of the face, back and chest was covered with comedomes and pitted scars from acne. There was a definite black moustache and black axillary and pubic hair of adult distribution.

The eyes, including fundi, were normal, as were the ears and mouth. According to the dental consultant, he had "the usual oral picture of a seven-year-old (chronologic age), except for some increase in the size of the dental arches." The lungs were clear and the heart was of normal size and rhythm, but a soft systolic murmur was heard in the supine position. His blood pressure was 120/78. The abdomen was negative, with no masses. The penis was enlarged to adult size and the testicles were firm and of adult size. According

*Read in Section on Pediatrics, Southern Medical Association, Forty-Sixth Annual Meeting, Miami, Florida, November 10-13, 1952.

to the genito-urinary consultant, "The prostate felt about the same size as an adult, twenty to thirty years of age. It was smooth, soft and non-tender. The testicles seemed normal but the whole genital development was that of a sixteen- or seventeen-year-old." The extremities were of normal proportions and showed no abnormalities. His height was 61½ inches and his weight was 111 pounds. The head to symphysis was 34 inches, symphysis to feet, 27½ inches, with an upper to lower ratio of 1.24. His arm spread was 59½ inches.

Laboratory work: the blood picture was normal: carbon dioxide 60 volumes per cent, sodium 130 meq. per L., potassium 4.4 meq. per L. A fasting sugar on one occasion was 146 mg. per cent. A glucose tolerance test done several days later had a fasting sugar of 90; one hour 93, two hours 112, three hours 78, four hours 87 and five hours 89. The failure to rise as high as it should was due to the fact that the technician performing the test was confused as to whether to give a 50 gram dose of glucose, which is usually given children, or a 100 gram dose, which is given adults. The final compromise was 75 grams, when it should have been 100 grams. No sugar was spilled in the urine during the glucose tolerance test. A urinalysis was negative.

Two twenty-four hour specimens of urine were sent to Baltimore to Dr. Lawson Wilkins, who did 17-ketosteroid determinations and found them to be 4.6 mg. and 4.8 mg., respectively, which is the normal adolescent level. X-rays of the long bones showed a bone age of nineteen years. The hip epiphyses were fused, as were the elbow epiphyses. The knees and distal and proximal forearm epiphyses were almost fused. The skull showed no abnormal calcification and the sella tursica was well formed and of adult size. The skull was of adult proportion and development.

Psychologically, the boy acted like a seven-year-old. He seemed to be fairly normal mentally and emotionally stable, insofar as could be determined in the short time he was under observation.

It is believed that this patient falls into the so-called constitutional type of sexual precocity because of the normal ketosteroid findings. If his precocity were due to an adrenal tumor, his ketosteroid excretion should be much higher, perhaps 15 to 30 mg. The presence of symmetrically enlarged testicles would tend to eliminate gonadal tumors, such as an interstitial cell tumor or teratoma. This also helps to rule out adrenal tumors in which cases one usually finds infantile testicles. Lack of history of previous illnesses would tend to rule out encephalitis. Normal neurologic examination and skull x-rays helped in eliminating brain tumors.

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CONGESTIVE HEART FAILURE AND SODIUM RETENTION

It has long been an accepted fact that abnormal sodium retention is one of the principle pathologic mechanisms resulting in the development of edema in heart failure. However, the fundamental mechanism responsible for this abnormality has been poorly understood and the subject of widespread debate.

The known fact that the renal tubules retain sodium in response to some of the adrenal cortical hormones has led investigators to implicate abnormal kidney function in this process. Earlier, it had been erroneously concluded that the decrease in excretion of sodium by the kidneys resulted from a decreased renal blood flow. It was soon realized that this was contrary to known facts. Investigators had previously shown that decreases in both renal blood flow and glomerular filtration commonly occur without the appearance of edema in cases of essential hypertension, chronic glomerulonephritis, and shock.[1]

It was further realized that although a reduction in renal arterial blood flow results in a slight fall in glomerular filtration rate, actual urine sodium values remain essentially normal. The reduction in glomerular filtration of sodium and water is readily compensated by a decrease in sodium reabsorption in the tubular epithelium.[2] Thus, the end product of sodium excretion shows little quantitative change. Similarly, an altered renal mechanism can be experimentally produced by elevation of the venous pressure, but resultant compensatory renal mechanisms return the urine sodium value to normal within a short time.[3] This knowledge made it apparent that in heart failure sodium retention cannot be fully explained by abnormalities in renal blood flow.

There is increasing evidence that hepatic dysfunction may evoke sodium retention and ascites. It has been postulated that this is due to the fact that poorly functioning liver tissue does not adequately inactivate adrenal cortical hormones that are instrumental in provoking renal reabsorption of sodium. It is known that ligation of the inferior vena cava above the hepatic veins causes retention of sodium and ascites, while ligation of the portal vein and the inferior vena cava below the liver fails to produce ascites.[4]

Similarities in sodium excretion values have been found in patients with ascites due to parenchymatous liver disease and in those with ascites that occur in congestive heart failure.[5] Likewise, diurnal sodium and water excretion values have been found to be similar in patients with portal cirrhosis to those with congestive heart failure.[6] These patients excrete relatively more sodium and water at night and relatively less during the day, as compared to normal individuals. It is possible that improvement in liver func-

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tion as a result of diminished congestion that occurs subsequent to rest during the night hours may account for this discrepancy.

Apparently the liver is the site of inactivation of a majority of the hormones elaborated by the body. Failure to inactivate the normally produced estrogens in portal cirrhosis results in excessively high levels of these hormones in the body fluids. This high concentration of estrogens may account in large part for some of the clinical findings in this disease.

The most potent of the adrenal hormones promoting sodium retention is a desoxycorticosterone-like steroid. Desoxycorticosterone itself is a synthetic compound, but a similarly acting steroid has been identified in the body fluids in relatively small but significant amounts.[1] This hormone has been shown to be largely inactivated in the liver.[2] It becomes apparent that abnormal concentrations of this hormone resulting from liver dysfunction will promote excessive renal retention of sodium and water. No doubt other hormones that possess sodium retaining activity and which are known to be metabolized by the liver tissue are similarly involved. Further evidence of this linkage was the demonstration that there is present in the urine of edematous patients with heart failure a substance that has a high sodium-retaining activity.[3]

Such a pattern would appear to explain more rationally the abnormal mechanism that results in excessive sodium retention by the body in patients with congestive heart failure.

THE L. E. CELL PHENOMENA

Five years ago Hargraves, Richmond, and Morton[4] first reported the finding of a new type of cell in the bone marrow of patients suffering with acute disseminated lupus erethematosus. Their discovery inspired new interest in this obscure and puzzling disease entity. Not only has it led to simple and valuable diagnostic tests for the disease, it has also aroused interest in the basic mechanisms of disseminated lupus and related diseases of the so-called collagen necrosis group.

The original report was based on the finding of certain phagocytic cells in smears of the buffy coat of heparinized bone marrow from patients with acute disseminated lupus. These cells are usually neutrophilic and contain one or more rounded pale-staining inclusion bodies that occupy a large portion of the cell. These inclusion bodies displace the nucleus toward the periphery. Such cells were designated L. E. cells, and could be readily distinguished from another phagocytic cell, the so-called tart cell. The tart cell is usually a monocyte which contains a well preserved lymphocyte nucleus and can be found in a wide variety of inflammatory states.

Originally it was believed that heparin was necessary for the formation of L. E. cells, but it has been subsequently demonstrated that the anticoagulant used did not affect the phenomenon. Subsequently it was shown that these cells could be demonstrated in venous blood, both before and after clotting had occurred. Furthermore, other workers demonstrated that the L. E. cell phenomenon could be produced by the addition of plasma obtained from a patient with lupus to normal leukocytes or marrow cells. Similarly, such cells could be produced in leukocytes obtained even from laboratory animals. This information indicated that the active agent was present in the serum or plasma from a patient with active disseminated lupus. Viable leukocytes are always necessary for formation of the morphologically characteristic cell.

In 1950 Haserick and associates[5] demonstrated that the L. E. factor was closely associated with the gamma globulin fraction of plasma. A short time later they were able to produce antibodies against this agent by injecting affected plasma into rabbits.

The L. E. cell inclusion body has been shown to be nucleoprotein in nature using various staining and photometric technics.

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In 1952, Rohn and Bond,[1] using supravital staining, were able to observe successive stages of nuclear autolysis in neutrophils which were ultimately engulfed by other polymorphonuclear leukocytes to form characteristic L. E. cells.

The work of Klemperer and his associates[2] in 1950 correlates the L. E. cell phenomena with the hematoxylin-staining bodies described by Gross, which were observed in post mortem sections taken from patients who died with acute disseminated lupus erythematosus. They demonstrated that histochemically this substance is depolymerized desoxyribosenucleic acid, and is similar to the inclusion body seen in the L. E. cell described by Hargraves. These workers were also able to demonstrate phagocytosis of hematoxylin-staining bodies by polymorphonuclear leukocytes in tissue sections. It has been postulated that this hematoxylin-staining substance is derived from degeneration of the nuclei of fibroblasts, lymphocytes, neutrophils, and histiocytes.

The question naturally arises, "How specific a diagnostic procedure is the L. E. cell test?" It is difficult to reach a definite conclusion in a disease of such relative rarity as acute disseminated lupus erythematosus. Conclusions must be based on rather small groups of patients seen by different observers and using different technics and diagnostic criteria. Allowance must be made for a few false interpretations resulting from the so-called human element. Such phenomena as erythrophagocytosis, tart cells, and phagocytosis of bacteria and other debris must be properly interpreted.

Admittedly, the original bone marrow technic gave many false negative results. However, in spite of such handicaps, the value of the test becomes more and more apparent with the passage of time. Thus Lee, Michael, and Vural[3] say that in spite of false positive and false negative results the test has a specificity and sensitivity both of about 96 per cent. Zimmer and Hargraves,[4] using their two-hour blood clot technic, report 100 per cent positive results in acute cases, and 80 per cent positive results in cases that were clinically diagnosed as subacute or chronic. Michael and associates[5] reported finding L. E. cells on tests of peripheral blood in 24 of 25 patients (96 per cent) with disseminated lupus. They did not see any patients with systemic lupus who did not at some time have the L. E. cell in either the blood or bone marrow. Haserick and Sundberg observed the phenomenon in four out of five acute cases (80 per cent). Berman and associates[6] observed the L. E. cell phenomena in marrows of 100 per cent of their ten acute cases, but not in related "collagen diseases." They did, however, report false positives in pernicious anemia and in dermatitis herpetiformis in which cases the L. E. cells were encountered with a frequency one-tenth to one-fiftieth of that observed in acute disseminated lupus. Trubowitz[7] has demonstrated cytochemically that the phagocytosis of amyloid by neutrophils in a case of multiple myeloma may suggest at least one cause of an apparent false positive L. E. cell reaction. The test seems to be at least as valuable as standard serologic tests for syphilis, which have been estimated to give positive results in 70 per cent of the primary cases and 90 per cent of the late untreated cases.[8]

Undoubtedly acute disseminated lupus erythematosus will be diagnosed more often as a result of tests for the L. E. cell. In the past the diagnosis has been mainly a clinical one and made only when the full blown clinical picture presented itself. It seems beyond question that many subacute cases have heretofore been mistaken for rheumatic fever, rheumatoid arthritis, glomerulonephritis, and other similar diseases, and that actually the disease is not so rare as had been previously supposed. The literature on the subject of the L. E. cell phenomena emphasizes once again the importance of nucleoprotein metabolism. Indeed, one wonders whether disseminated lupus is not actually a

1. Rohn, R. J.; and Bond, W. H.: Some Supravital Observations on the "L. E." Phenomenon. Amer. J. Med., **12**:422-432, 1952.
2. Klemperer, P.; Gueft, B.; Lee, S. L.; Leuchtenberger, C.; and Pollister, A. W.: Cytochemical Changes of Acute Lupus Erythematosus. Arch. Path., **49**:503-516, 1950.
3. Lee, S. L.; Michael, S. R.; and Vural, I. L.: The L. E. (Lupus Erythematosus) Cell. Amer. J. Med., **10**:446-451, 1951.
4. Zimmer, F. E.; and Hargraves, M. M.: The Effect of Blood Coagulation on L. E. Cell Formation. Proc. Staff Meet., Mayo Clin., **27**:424-430 (Oct. 22) 1952.
5. Michael, S. R.; Vural, I. L.; Bassen, F. A.; and Schaefer, L.: The Hematologic Aspects of Disseminated (Systemic) Lupus Erythematosus. Blood, **6**:1059-1072, 1951.
6. Berman, L.; Axelrod, A. R.; Goodman, H. L.; and McClaughry, R. I.: So-Called "Lupus Erythematosus Inclusion Phenomenon" of Bone Marrow and Blood. Amer. J. Clin. Path., **20**:403-418, 1950.
7. Trubowitz, S.: The Sternal Marrow Aspiration of Amyloid in Multiple Myeloma. Blood., **5**:581-585, 1950.
8. Hazen, H. H.: Syphilis in the Negro: Handbook for General Practitioners. Venereal Disease Information, 15, 1942.

disorder of nucleoprotein metabolism rather than of the collagen matrix. At any rate, five years of scrutiny have confirmed the first observations on the L. E. cell phenomena, and have established a place for the L. E. cell test among other diagnostic laboratory determinations. Further investigation of the phenomena promises to elaborate on the mechanism of the underlying disease process and its management.

CANCER CYTOLOGY: PROGRESS IN MEDICINE

Since the invention of the microscope of Anton van Leeuwenhoek in the Seventeenth Century, intimate knowledge of disease has progressively increased. Johannes Mueller, founder of microscopic pathology, and his pupil, Rudolph Virchow, who wrote the great book "Cellular Pathology"[1] in which he established the cell as the primal unit in which disease processes operate, blazed the trail along which modern research makes its way.

Pathologists have for many years studied the cytology of ascitic and other serous cavity fluids for confirmation of diagnosis of malignancy. As far back as 1853 Donaldson[2] wrote on "The Practical Application of the Microscope to the Diagnosis of Cancer," describing the cells seen in "tumor juice." He wrote of "the cancer nucleus, the polygonal, or more or less spherical, and ovoid cell; the caudated cell; the fusiform cell; the concentric cell; the compound or mother cell; and of agglomerated nuclei connected by amorphous tissue."

In 1860, Beale[3] described cancer cells in sputum from a case of cancer of the pharynx and adjacent parts. Other investigators have contributed through the years to cytologic data which passed largely unnoticed or were regarded merely as scientific curiosities without practical value.

Cytology is not new. But technics for its application have only in recent years been developed and in some systems perfected.

With many great advances in medical history, the significance of a finding is often not realized or not applied for a long time. It is now over twenty years since Dr. George Papanicolaou[4] of Cornell University, New York, and Professor A. Babes[5] of Budapest reported the recognition of cancer cells in human vaginal secretions, yet the acceptance of their findings has been slow and a full appreciation of the value of their work does not yet exist.

In 1943 Drs. Papanicolaou and Traut[6] published their epic monograph entitled "Diagnosis of Uterine Cancer by the Vaginal Smear." From this publication dates most present day interest in cytology. Because earlier diagnosis is now possible, many gynecologists and pathologists have since then become enthusiastic over the improved methods of cancer control and treatment.

In 1935, Dudgeon and Wrigley[7] in England successfully searched pulmonary secretions for malignant cells which they found to be of diagnostic value. Later, Dr. J. Bamforth[8] at St. Thomas' Hospital in London achieved high accuracy in cytodiagnosis of pulmonary cancer. He has applied it to other extragenital secretions, preferring, for example, a stained scraping of cells from excised breast tumors to a frozen section as more expedient in diagnosis. The search for cells in various body secretions has been taken up with considerable vigor by many able investigators. In some secretions, like the sputum and bronchial secretions, the cytologic technics have proven to be of considerable practical importance. In others, such as the gastric and prostatic secretions and in urine, such technics have proven helpful and of increasing practical value.

The group at McGill University was among early contemporary investigators in this field, studies being initiated in 1941. They introduced cervical technics as preferred to vaginal, described the surface cell biopsy and developed mailing methods.[9] This latter advance carried the method beyond the range of the hospital laboratory to the physician's office,[10]

1. Virchow, R.: Die Cellularpathologie in Ihre Begrundung auf Physiologische und Pathologische Gewebelehre. Berlin: A. Hirschwald, 1858.
2. Donaldson, F.: The Practical Application of the Microscope to the Diagnosis of Cancer. Amer. J. Med. Sci., 23:43, 1853.
3. Beale, L. S.: Examination of Sputum from a Case of Cancer of the Pharynx and the Adjacent Parts. Arch. Med., 2:44, 1860.
4. Papanicolaou, G. N.: New Cancer Diagnosis. Proc. of the Third Betterment Conf., p. 528, 1928.
5. Babes, A.: Du Cancer de Col Uterin par les Frottis. La Presse Med., 36:451-454, 1928.
6. Papanicolaou, G. N.; and Traut, H. F.: Diagnosis of Uterine Cancer by the Vaginal Smear. New York: The Commonwealth Fund, 1943.
7. Dudgeon, L. S.; and Wrigley, C. H.: On Demonstration of Particles of Malignant Growth in Sputum by Means of Wet-Film Method. J. Laryng. & Otol., 50:752, 1935.
8. Bamforth, J.: Examination of the Sputum and Pleural Fluid in the Diagnosis of Malignant Disease of the Lung. Thorax, 1:2, 1946.
9. Ayre, J. E.: Simple Office Test for Uterine Cancer Diagnosis. Canad. Med. Assn. J., 51:17-22, 1944.
10. Ayre, J. E.; and Dakin, E.: Cervical Cytology Tests in Cancer Diagnosis: Glycerine Technique for Mailing. Canad. Med. Assn. J., 54:489-491, 1946.

leading to the development of the concept of regional cytology centers.

Because of its accuracy and the opportunity it affords for extremely early diagnosis, investigation of cervical cancer by the cell method stands in a class by itself. In addition, the possibility of plotting the cell behavior pattern of the "precancer stage" of cervical cancer is more promising than in any other form of malignant disease.[1]

The recognition of the "precancer cell complex" (Ayre[2]) or dyskaryosis (Papanicolaou[3]) constitutes a genuine challenge to investigators to prove or disprove its malignant character by long term behavior study, by cytochemical analysis and by all means at the disposal of the student of cancer today.

The final role of cytology in the investigation of cervical cancer genesis has yet to be played. As Papanicolaou[3] said three years ago,

"Should one attempt to evaluate the cytologic method and its general significance, he should bear in mind that it is still going through a period of evolution, and that our present achievements do not actually represent our maximum expectations in this new field. There is no doubt that the method possesses great potentialities, not only with regard to its practical usefulness in cancer diagnosis, but also in its more fundamental value as a new branch of the morphological sciences."

Papanicolaou correctly estimates cytology as an infant science destined to become a titan. How it will ultimately serve man, what its scope will be, is food for speculation. Yet, to paraphrase Emerson's dictum, "Coming events cast their shadow before them," and to say, "A rising science shows a new dawn" holds true. Cytology in its dawn, has already shed so much light on so many problems that the blaze of its noon is bound to reveal new depths, new functions, new relationships within the cell, and new problems yet to be solved.

1. Ayre, J. E.: Cancer Cytology of the Uterus. New York: Grune & Stratton, 1951.
2. Ayre, J. E.: Selective Cytology Smear for Diagnosis of Cancer. Amer. J. Obst. & Gynec., 53:609-617, 1947.
3. Papanicolaou, G. N.: A Survey of the Actualities and Potentialities of Exfoliative Cytology in Cancer Diagnosis. Ann. Int. Med., 31:661-674, 1949.

TWENTY-FIVE YEARS AGO

From Journals of 1928

Goat Glands.[4]—In and from the little village of Milford, Kansas, John Richard Brinkley demonstrates the commercial possibilities of "goat glands.". . . He obtains his publicity through sensational articles in newspapers that cater to such stuff, and by means of the privately owned radio broadcasting station KFKB. . . .

In 1915 . . . he got a diploma from the Eclectic Medical University of Kansas City, Missouri. For good measure, four years later . . . in 1919 he obtained another diploma from the diploma mill, Kansas City College of Medicine and Surgery. . . . In 1920, Brinkley was arrested on the charge of selling "spirituous, malt, vinous and other intoxicating liquors" and of maintaining a public nuisance. . . . San Francisco papers of March 23, 1922, reported that Harry E. Andrews, the managing editor of the Los Angeles *Times,* was under the care of John R. Brinkley, who . . . performed the "goat gland operation" on him. . . . In the autumn of 1926 a lurid article . . . appeared in a sensational Sunday newspaper . . . "How a Famous Surgeon Combines Old-Time Religion and New-Fangled Operations on a Strange Medico-Gospel Farm.". . . As to the operation itself, let Brinkley speak!

"Now this operation, which I call 'Compound Operation' consists of adding a new artery and nerve to the patient's own sex glands. . . . In addition to this I add some pure, fresh, healthy animal gland tissues which act as a 'charger' battery . . . to your glands. . . . Regardless of how old you may be, there is good for you in this combination.". . . He also has a "Special Gland Emulsion." This he sells on the mail-order, cash-in-advance plan . . . "one month's supply of the Emulsion is $100."

. . . it is obvious that John R. Brinkley is a blatant quack of unsavory professional antecedents. It has been reported recently that the federal commission on radio, in a drastic effort to give good radio service, is going to eliminate many broadcasting stations now operating in the United States . . . in the public interest, radio stations that are operated by and for quacks would seem very properly to be among the first to be discontinued.

Rickets.[5]—Pediatricians regard rickets as a universal disorder. . . . Nature appears not to have been bountiful in the provision of antirachitic products. . . . Other deficiency disorders, such as scurvy, beriberi, xerophthalmia and pellagra, tend to be averted by increasing the intake of milk . . . in regard to rickets the situation is the opposite . . . if an infant, aged six months is given a pint of milk a day, it is less apt to develop rickets than if it consumes a quart a day . . . the antirachitic factor . . . is entirely absent in the cereals and in fruits . . . it seems probable that the human infant depends in no small degree on some other environmental influence to protect it against improper development of the skeletal system. Less than a decade ago such a factor was discovered in sunshine with its potent rays in the ultraviolet region. . . . The short ultraviolet rays are readily cut off by the smoke, dust and moisture in the atmosphere. . . . The antirachitic effect of sunshine in April and May is approximately eight

4. Bureau of Investigation: John R. Brinkley—Quack. The Commercial Possibilities of Goat-Gland Grafting. J.A.M.A., 90:134, 1928.

5. Editorial: Sunshine, Sky Shine and Rickets. J.A.M.A., 90:118, 1928.

times as great as in December, January and February. . . . Ordinary window glass is impervious to the antirachitic rays of sunshine. Consequently much effort has been devoted of late by glass manufacturers to the production of glasses that will transmit some of the rays in the region of the ultraviolet.

Protein Requirement in Health.[1]—The protein requirement of adult man has been the subject of debate for a quarter of a century. Prior to that time the so-called Voit standard, postulating an average intake of 118 Gm. of protein in a diet yielding about 3,000 calories daily, was regarded as appropriate for an average sized man engaged in moderate work. Atwater and his associates formulated the requirement to include as much as 175 Gm. of protein for persons engaged in active muscular exertion and as little as 100 Gm. for persons of the sedentary type. . . . Chittenden wrote . . . twenty years ago that "the penalties of excessive proteid consumption are found in many ills, for which perhaps the victim seeks in vain a logical explanation: gastrointestinal disturbance, indigestion, intestinal toxemia, liver troubles, bilious attacks, gout, rheumatism." . . . The other extreme of contention was simultaneously formulated by Benedict . . . . He wrote . . . The fact that a subject can so adjust an artificial diet as to obtain nitrogenous equilibrium . . . is no logical argument for the permanent reduction of the nitrogen in food for the period of a lifetime. . . . The advocates of the high standard . . . point out how dietary studies all over the world show that in communities where productive power, enterprise and civilization are at their highest, man has instinctively and independently selected liberal rather than small quantities of protein. Pearl has estimated the daily protein intake of the people of the United States as 121 Gm. . . . The healthy youth of the country, as represented by the average student of medicine, has today become adjusted to a protein consumption not exceeding 80 Gm. daily.

Capillary Permeability.[2]—The effects upon capillary permeability of oxygen lack, of high tensions of carbon dioxide, and of increased hydrogen ion concentration were studied in single capillaries of the frog mesentery, by the direct measurement of fluid movement in cubic microns per square micron of capillary wall per second, with measurement of capillary pressure.

Immediately after a three minute period of oxygen lack, fluid filtered through the capillary wall at approximately four times the normal rate. The increased permeability of the wall permitted also the passage of proteins, thus reducing the effective osmotic pressure of the plasma proteins to almost one-half their normal value.

The asphyxiated capillary . . . wall acted merely as a passive filter, though more permeable than normal.

With the return of circulation the capillary wall rapidly recovered its impermeability to protein and the rate of fluid movement was also reduced practically to normal.

1. Editorial: The Protein Requirement of Adult Man. J.A.M.A., 90:32, 1928.
2. Landis, Eugene M.: Micro-Injection Studies of Capillary Permeability. III. The Effect of Lack of Oxygen on the Permeability of the Capillary Wall to Fluid and to the Plasma Proteins. Amer. J. Physiology, 83:541, 1928.

Correspondence

VETERANS ADMINISTRATION
Department of Medicine and Surgery
Washington 25, D. C., November 14, 1952

To Dr. Robert J. Wilkinson
Huntington, West Virginia

Attached is a copy of an Associated Press story purporting to quote from an address you prepared for delivery before the 46th Annual Meeting of the Southern Medical Association at Miami, Florida.

When I first read this article, I was shocked to think that a physician, trained to approach all questions on the basis of truth and scientific facts, could be delivered of such a conglomeration of invidious innuendo, misstatements, half-truths and even untruths as are contained in these few paragraphs.

After reading the article, it occurred to me that perhaps you had been misquoted, as has so often happened to me. I trust this is the case, as I would hate to think that a physician, holding the highest office in a responsible medical association, would so greatly mislead his associates when the facts were available to him for the asking. It is for this reason I am sending you the newspaper account with the request that you let me know whether or not it is accurate.

I believe it is entirely reasonable and proper for me to request this information as I am responsible for the conduct of the medical program of the Veterans Administration and therefore must assume that if you are correctly quoted, the brunt of your invective is addressed to me.

In my opinion, this medical program not only is the greatest, but the most forward-looking being carried on in the world today. It demonstrates conclusively the possibility of the highest type of medical care being provided through the wholehearted cooperation of government and the best elements of private medicine. Many members of your association are cooperating with this program and take pride in the fact they not only are contributing to improving the quality of medical care provided veterans, but also to the advance of medical knowledge to the benefit of all people.

You are quoted as saying, "More and more VA hospitals are being erected each year at a staggering cost to the taxpayer notwithstanding the tragic and glaring fact that many of them are only partly filled and then only by veterans who are not rightfully entitled to this service."

The facts are that the Veterans Administration hospital construction program was authorized in 1946 and 1947 and it has been progressing steadily toward completion since that time. No new hospitals, beyond the original authorization are being planned. In fact, the

original authorization was reduced by some 16,000 beds. You are correct when you say some (not many) of these hospitals are only partly filled. This is partly because appropriations sought to operate these hospitals at capacity have been denied by the Congress and available funds do not permit staffing and operating all beds in all hospitals. In some instances it is due to unfortunate hospital locations and inability to recruit in certain areas and categories.

As for the statement that beds are "occupied by veterans who are not rightfully entitled to this service," I categorically deny the truth of this statement. The right of a veteran to hospitalization is established by law and not by whim. Every patient in a VA hospital is a veteran, except for an infiniteaimal number who are taken in for emergency treatment as a humanitarian act, and all are admitted after their eligibility is established in accordance with law.

Again you are quoted as saying, "it is reported that approximately 90 per cent of those treated have nonservice-connected disabilities, and many of these probably do not need hospitalization."

Even the most "wild-eyed" critics of the program have never claimed that 90 per cent of VA patients are nonservice-connected. The exact figures are available and are supplied upon request to anyone who is interested enough to ask. I am attaching for your information a breakdown in which VA patients are classified in ten categories. In addition to showing that 35 per cent of the patients are being treated for service-connected ailments, it also points up that about 90 per cent of the remainder would never receive treatment if they had to pay for either medical or hospital care. The statement that many of these do not need hospitalization is, in my opinion, a slander on the medical profession—and on some of the most outstanding men in it. These patients are admitted after examination and determination by qualified physicians that they are in need of hospitalization. It appears to me that a physician, after examining a patient, is the best known authority as to his medical needs. Certainly he is better qualified than another physician—regardless of the latter's professional attainments—who has never seen the patient.

The article further quotes you as saying, "A careful study might reveal the startling fact that many of those who are admitted are encouraged to be dishonest by falsifying their application in claiming pauperism."

Not only does this article come near to charging charlatanism on the part of doctors, it now attempts, by implication, to convict responsible officials of actual criminal fraud. I know of no incident where any veteran has been encouraged to sign fraudulently the statement required by law. If you know of such an act, both the person signing and the person encouraging them to sign are guilty of fraud and any responsible person knowing of it would have an obligation to expose those guilty. Actually, the law does not require that an applicant claim to be a pauper. The statement is that in his opinion he cannot afford to pay for the medical care elsewhere. A cursory thought will point out a vast difference in the two.

In this connection, I would like to direct your attention to an article by Mr. Greer Williams, Public Relations Director, American College of Surgeons, which appeared in the November issue of "The Modern Hospital" under the caption, "The VA is not the Villain."

When later you are quoted as expressing your idea as to how the hospitals should be placed and operated you are, of course, exercising the right of every free-born American to have an opinion. In that I may disagree with you, but I will defend your right to self-expression. In the foregoing, I have attempted to avoid discussing matters of opinion or of theory and have confined myself to matters of fact—and facts which are at all times available to you and to anyone whose interest prompts them to request the information.

(Signed) J. T. BOONE
Vice Admiral (M.C.) U. S. Navy Rtd.
Chief Medical Director

Huntington, West Virginia, November 28, 1952

To Vice-Admiral Joel T. Boone
Washington 25, D. C.

Your letter reached me on November 20, several days after it was given to the press, and it is for this reason I offer my apology for not having answered it at an earlier date.

I sincerely regret that my address to the Southern Medical Association was quoted only in part by the press, for I am sure you would never have given your letter to the press had you first informed yourself of the facts contained therein. I think you will agree that all too often newspaper reports are misleading, in that an effort is made to emphasize the controversial points without telling the whole story, and for this reason I shall decline to enter into a newspaper discussion relative to the Veterans Administration program or to any other medical program.

First, I should like to say that I am not opposed to the program of rendering the highest type of service to service-connected disabled veterans, and in this connection I congratulate you upon improving this service by integrating this program with medical schools. Undoubtedly this will be mutually advantageous by assuring the veteran the best available medical care and perhaps at a great saving in tax money.

Again you are to be congratulated upon having many outstanding physicians in your organization, some of whom are my close friends, and I am confident they are rendering a real service to the worthwhile veteran. But notwithstanding all the fine work that is being done, the fact remains that the Veterans Medical Program (even though it is law) is a challenge to our American system of medical practice in that veterans regardless of service-connected disability are admitted to Veterans Hospitals. This practice if continued or enlarged, will exert a further impact upon our economy, particularly as it affects the over all cost of medical care for the average American citizen. In this connection I respectfully refer you to a recent article by Dr. Evarts Graham, President, Board of

Regents, American College of Surgeons, which appeared in the July issue of *Annals of Surgery*.

Regarding my reference to the number of such patients admitted, my figures were relative and at no time did I make a positive statement as to percentages. I quote from my address: "It is reported that approximately 90 per cent of those treated have non-service-connected disability and many of these probably do not need hospitalization." This approximate figure was furnished by many professional and non-professional employees of the Veterans Administration. It appears from newspaper accounts that these figures are not too inaccurate for the West Virginia Hospitals: Beckley, 200 bed capacity, October report, 116 patients (including those on pass) 90 of whom are non-service-connected. Newton Baker Hospital, Martinsburg, service-connected 147, non-service-connected 517, domiciliary not classified 488. From Clarksburg five physicians who are connected with the hospital estimate that certainly not more than 15 per cent are service-connected. The Huntington Hospital report appeared in our local paper but I have been unable to see this issue, however, a most reliable physician advises me that my estimate of approximately 90 per cent for non-service admissions largely corresponds to this newspaper report.

You challenge my statement that probably many of these do not need hospitalization. Again I say, I am only quoting from those who are or have been associated with your organization. As for the statement relative to beds being occupied by those not rightfully entitled to same, I admit my ignorance relative to a law which makes all veterans eligible for this service, but at the same time, I still maintain that many of those admitted are financially able to pay for this service and should not be cared for at tax-payers' expense. In this connection I have been told that no applicant is allowed to be questioned as to his financial status, that he is asked to sign the application, which places him in the class of being unable to pay for hospital or medical service.

Since it is impossible to discuss freely by letter all matters incident to the future of medicine and the role the Veterans medical program is playing in shaping this future, I shall again remind you that my figures used were relative and furnished me in most instances by physicians who are associated directly or indirectly with your organization.

Finally, may I remind you of the closing paragraph of my address relative to the Veterans program which states: "But in this connection [the veterans] we must reckon with the political law maker who seems to be more interested in wasting tax money than in providing for the veteran on a sane and sensible basis. And all for what? Votes."

Suffice it to say that the many telegrams, letters and editorials I have received indicate in no unmistakable terms that others throughout the country are thinking as I do about this matter.

Regarding my interest in the welfare of my profession and patients alike, and my reputation for integrity I shall leave judgment to my medical colleagues who have known me and have worked with me for forty years.

From this free discussion of facts it is my sincere wish that some rational plan can be evolved that will continue to insure for the service-connected veteran the finest medical and nursing care and at the same time safeguard the American way by refusing to treat those, who in my opinion, are not rightfully entitled to this service. It it my hope that the new Congress will study the problem of treatment for the veteran and the cost incident thereto and enact suitable legislation accordingly. I believe most of the medical observers agree that the cost of medical care of the veteran is too high and I am sure the medical profession will gladly work with you or any other representative of your organization in planning for the veteran to the end that he may receive the highest type of medical and hospital care at a tremendous saving in tax money.

With the idea that all who heard my address may be kept informed, I am asking the *Southern Medical Journal* to publish your letter and my reply to you.

(*Signed*) R. J. WILKINSON, M.D.
Past President, Southern Medical Association

Book Reviews

The Clinical Use of Fluid and Electrolyte. By John H. Bland, M.D., Assistant Professor of Medicine, University of Vermont College of Medicine. 259 pages with 75 figures. Philadelphia and London: W. B. Saunders Company, 1952. Price $6.50.

Information on recent advances in knowledge of fluid and electrolyte balance is scattered over numerous medical journals. A volume such as this, which seeks to summarize this knowledge certainly fills a void in medical literature. In his preface, the author says: "The aim of this book is to provide a practical, usable guide to the recognition and treatment of the various fluid and electrolyte abnormalities that may arise in medical and surgical patients." If he has not completely achieved his purpose, it is due to the fact that he has written an almost encyclopedic treatise, with many extraneous details. The pages are large and densely printed, with few subheadings.

It is hard to imagine that many practicing physicians could devote sufficient time to the perusal of this monograph. On the other hand, it contains a comprehensive review of the literature and is, therefore, quite invaluable as a reference work for those who wish to study any phase of the subject.

The chapter headings reflect the various conditions in which fluid and electrolyte disturbances are of great importance. Among the topics discussed are water and sodium chloride depletion and potassium metabolism; fluid and electrolytes in congestive heart failure, in surgical patients, renal disease, diabetes mellitus, adrenal cortical insufficiency, and injury due to physical agents. One chapter is devoted to the metabolic effects of ACTH and cortisone on electrolyte and body water. Both diagnosis and treatment of these disturbances are considered. Some observers will disagree with the author when he states flatly,

in the section on treatment of congestive heart failure: "Should renal disease coexist, it does not contraindicate the use of mercurial." It is pointed out that recognition and treatment of body water and electrolyte alterations in the aged has been neglected in the past, and one of the most useful chapters is that which is concerned with the management of geriatric patients in this respect.

Cardiac Therapy. By Harold J. Stewart, M.D., Associate Professor of Medicine, Cornell University Medical College, New York. 622 pages with illustrations. New York: Paul B. Hoeber, Inc., 1952. Price $10.00.

This is a carefully and conscientiously written account of the treatment of heart disease. From a consideration of congestive heart failure, diuretics, digitalis, and anticoagulants, it proceeds to the management of all types of cardiac disorders, classified according to etiology. Finally, there are several chapters on such special topics as heart disease in the aged, in pregnancy, and in surgical patients. A remarkable chapter on "What to Tell Patients About Their Heart Disease" summarizes suggestions concerning this important aspect of medical care, including some advice on air travel. A discussion of specific measures toward prevention of cardiac disease is likewise noteworthy. The author is to be commended for giving specific instructions and detailed plans for therapy. In some instances, however, such as digitalization schedules and restriction of fluids in congestive failure, he gives primary consideration to methods of management which are by no means accepted by all authorities, and the value of a book of this scope could be enhanced by allotting more space to alternate methods.

New drugs and new therapeutic measures have been included to the fullest possible extent. This holds true for resins, khellin, radioactive iodine, and cardiac catheterization, but especially for the more recently developed surgical procedures in certain congenital cardiovascular defects. This book is based on extensive personal experience and is well worth reading for both practitioner and internist.

Ophthalmic Pathology. An Atlas and Textbook. By Jonas S. Friedenwald, Helenor Campbell Wilder, A. Edward Maumenee, T. E. Sanders, John E. L. Keyes, Michael J. Hogan, W. C. and Ella U. Owens, with the editorial assistance of Helen Knight Steward. Published under the Joint Sponsorship of The American Academy of Ophthalmology and Otolaryngology and the Armed Forces Institute of Pathology. 489 pages with 260 plates. Philadelphia: W. B. Saunders Company, 1952. Price $18.00.

This Atlas and Textbook is the result of the combined efforts of the most distinguished leaders in American ophthalmic pathology. They had at their disposal America's best collection of pathologic material as well as the photographic and editorial facilities of the Armed Forces Institute of Pathology.

The text devotes considerable space to anatomy, physiology, and the correlation between pathologic changes in the eye and the clinical pictures of ophthalmic diseases. Excellent photomicrographs make it possible for the student to study the lesions discussed in the text as they appear under the microscope. The best accepted terminology is used.

Each of the 18 chapters is followed by references and plates of photomicrographs illustrating the text. Case histories are not given. Careful editing presents this specialized scientific material in a readable style which will appeal to any student, general physician, or specialist who includes the eye in the study of his patients.

Very little space is devoted to controversial matters and an unusual amount of information is condensed into one volume. The clinician would welcome more discussion and illustrations of the cytologic examinations of the conjunctiva which he uses in his office.

American ophthalmologists have looked forward to the completion of this modern publication which compares favorably with the classical works of E. Fuchs and J. H. Parsons.

Diseases of Metabolism. Detailed Methods of Diagnosis and Treatment. Edited by Garfield G. Duncan, M.D., Director of Medical Division, Pennsylvania Hospital, Philadelphia, Pennsylvania. Third Edition. 1179 pages with illustrations. Philadelphia: W. B. Saunders Company, 1952. Price $15.00.

Since its first edition more than ten years ago, Duncan's *Diseases of Metabolism* has achieved a position of eminence among medical publications. With the announcement of the new third edition, Dr. Duncan and his collaborators bring this valuable text abreast of the innumerable metabolic and nutritional advances achieved in the past five years.

A number of major changes in this edition may be noted. The chapter on carbohydrate metabolism has been rewritten by Drs. Soskin and Levine; the chapter on under-nutrition has been rewritten by Dr. Ancel Keys; a chapter on diabetes in childhood by Dr. Priscilla White has been added; the chapter on thyroid disorders has been rewritten by Drs. Rawson and Rall; and there is a new chapter on porphyrin metabolism by Dr. Cecil Watson.

Among some of the other new features of interest are: a description of the newer diagnostic tests for Addison's disease; an extensive discussion of various modified insulins, including a useful table (p. 861) comparing eight different insulins or insulin combinations; an expanded section on diabetic complications, especially neurologic changes in diabetes; the role of radioactive iodine in the treatment of Grave's disease; a new discussion of lower nephron nephrosis, and the inclusion of recent advances in electrolyte metabolism.

Each chapter is complete and independent of other chapters, so that the necessity for cross referral is largely eliminated. The editor and his staff have maintained the high standard of previous editions, so that readers will find this edition to be not only a

useful and reliable reference work but also a worthwhile working guide to modern medical practice.

Diagnostic Bacteriology. A Textbook for the Isolation and Identification of Pathogenic Bacteria. By Isabelle Gilbert Schaub, A.B., Technical Director, Clinical Bacteriology Laboratories, The Johns Hopkins Hospital; and M. Kathleen Foley, M.A., Instructor in Bacteriology, Department of Biological Sciences, College of Notre Dame of Maryland, Baltimore. Fourth Edition. 355 pages. St. Louis: The C. V. Mosby Company, 1952. Price $4.50.

This fourth edition of a work previously entitled "Methods for Diagnostic Bacteriology" has been completely revised and has two entirely new sections.

The text is divided into five parts. Part one, a new addition, deals with basic bacteriological methods: the Gram stain, selection of media, preparation and use of agar plates. Part two, on bacteriological diagnosis, has been almost completely rewritten and details latest procedures for cultivation of bacteria from clinical and autopsy material, study of fungi, identification of bacteria by colony characteristics, and methods for identification of organisms by biochemical reactions. This last portion is richly supplied with illustrative tables. Part three, a new addition, is a presentation of the general principles involved in, and methods for, determination of sensitivity of bacteria to the various antibiotics. Complete directions are given for the various sensitivity tests. There is a short chapter devoted to tests for the susceptibility of Mycobacterium tuberculosis to streptomycin. Part four is devoted to serologic diagnosis and includes such methods as the Quellung method for the typing of pneumococci and identification of Hemophilus influenzae and Friedlander's bacilli, as well as various precipitation and agglutination reactions. In part five are given formulas for preparation of various media recommended in the text. The last two chapters are devoted to staining methods, microscopic preparations, preparation of reagents and technic for special physiochemical tests.

Numerous footnotes throughout the text supplement information given in tables and supply names of commercial laboratories from which many of the media can be obtained.

The need for a textbook of medical bacteriology seems adequately filled with this revision.

Cold Injury. Transactions of the First Conference, June 4-5, 1951, New York City. Edited by M. Irene Ferrer, Department of Medicine, College of Physicians and Surgeons, Columbia University, New York. 248 pages, illustrated. Packanack Lake, New Jersey: Josiah Macy, Jr., Foundation Publications, 1952. Price $3.25.

In organizing this conference on Cold Injury, the Macy Foundation had the complete cooperation of the medical branch of each of the armed services. A great deal of the material is based on experience gained in World War II and the Korean conflict. The conference allowed the maximum exchange of ideas upon this subject and presented new approaches and technics with their evaluation, along with the examination and evaluation of older technics. Not only were clinical experiences discussed, but also research in the fields of biophysiology, physiology, surgery, clinical pharmacology, and pathology.

This book, which is a verbatim report of the transactions of the first meeting of the group, covers a description of animal studies in various laboratories, and current thinking in regard to homeokinesis, hypothermia, and acclimatization.

Books Received

The 1952 Year Book of Drug Therapy. (August 1951-August 1952). Edited by Harry Beckman, M.D., Director, Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry; Consulting Physician, Milwaukee County General and Columbia Hospitals, Milwaukee, Wisconsin. 606 pages with illustrations. Chicago: The Year Book Publishers, Inc., 1952. Price $5.50.

Surgical Applied Anatomy. By Sir Frederick Treves, Bt. Twelfth Edition, Revised by Lambert Charles Rodgers, V.R.D., M.D., M.Sc., F.R.C.S., F.R.C.S.E., F.R.A.C.S., F.A.C.S.; Professor of Surgery, University of Wales; Director of Surgical Unit, Cardiff Royal Infirmary; Surgeon, United Cardiff Hospitals; Surgical Consultant to the Royal Navy; Member of Council, Royal College of Surgeons of England. 590 pages with 206 illustrations, 66 in color. Philadelphia: Lea and Febiger, 1953. Price $6.50.

Unipolar Lead Electrocardiography and Vectorcardiography. Including the Standard Leads, the aV and V Leads, the Cardiac Arrhythmias and the Principles of Vectorcardiography. By Emanuel Goldberger, M.D., F.A.C.P., Associate Attending Physician, Montefiore Hospital, New York; Cardiologist and Attending Physician, Lincoln Hospital, New York; Consulting Cardiologist, St. Joseph's Hospital, Yonkers, New York; Diplomate of the American Board of Internal Medicine; Lecturer in Medicine, Columbia University. Third Edition. 601 pages with 312 illustrations. Philadelphia: Lea and Febiger, 1953. Price $10.00.

Functional Neuroanatomy. By Wendell J. S. Krieg, B.S. in Med., Ph.D., Professor of Anatomy; Formerly Professor of Neurology and Director of the Institute of Neurology, Northwestern University Medical School. Second Edition. 659 pages with illustrations. Philadelphia: The Blakiston Company, Inc., 1953. Price $9.00.

Diseases of the Skin. A Manual for Students and Practitioners. First compiled by the late Robert W. MacKenna, M.A., M.D., Ch.B. (Edin.) Fifth Edition by Robert M. B. MacKenna, M.A., M.D. (Camb.), F.R.C.P. (Lond.); Physician-in-Charge of the Dermatological Department, and Lecturer in Dermatology, St. Bartholomew's Hospital and Medical College, London; Physician to St. John's Hospital for Diseases of the Skin, London. 611 pages with illustrations. Baltimore: The Williams and Wilkins Company, 1952. Price $8.00.

Acute Renal Failure. Including the Use of the Artificial Kidney. By John T. MacLean, M.D., F.R.C.S.(C)., F.A.C.S.; Assistant Urologist, Royal Victoria Hospital; Director of Urology, Queen Mary's Veterans Affairs; Demonstrator in Surgery, McGill University, Montreal, Canada. 114 pages with illustrations. Springfield, Illinois: Charles C. Thomas, Publisher, 1952. Price $6.50.

Visual Anatomy: Thorax and Abdomen. By Sydney M. Friedman, M.D., Ph.D., Professor of Anatomy, University of British Columbia, Vancouver, Canada; Formerly Associate Professor of Anatomy, McGill University, Montreal, Canada. 203 pages with illustrations. Springfield, Illinois: Charles C. Thomas, Publisher, 1952. Price $10.50.

The Biochemistry of Gastric Acid Secretion. By Edward J. Conway, M.D., D.Sc., F.R.S., Professor of Biochemistry and Pharmacology, University College, Dublin, Ireland; Honorary Fellow, Royal College of Physicians, Ireland. 185 pages with illustrations. Springfield, Illinois: Charles C. Thomas, Publisher, 1952. Price $6.50.

Problems of Consciousness. Transactions of the Third Conference, March 10 and 11, 1952, New York, New York. Edited by Harold A. Abramson, M.D., Associate Physician for Allergy, The Mt. Sinai Hospital, New York, New York. 156 pages with illustrations. Packanack Lake, New Jersey: The Josiah Macy, Jr., Foundation Publications, 1952. Price $3.25.

Morbus Alzheimer and Morbus Pick. A Genetic, Clinical and Patho-Anatomical Study. By Torsten Sjogren, Hakon Sjogren and Ake G. H. Lingren. Translated by Donald Burton. 152 pages with illustrations. Norregade 6, Copenhagen: Ejnar Munksgaard, 1952. Price 25 Swedish Crowns.

Southern Medical News

ALABAMA

Medical Association of the State of Alabama will hold its next annual meeting in Birmingham, Thomas Jefferson Hotel, April 16-18.

Dr. Harvey B. Searcy, Tuscaloosa, has resigned as a member of the board of trustees, Alabama State Hospitals, and the board of managers, Partlow State School, after serving seventeen years. His father, Dr. Reuben Searcy, was instrumental in the establishment of state care for the insane of Alabama more than a hundred years ago, and was superintendent of the institution for many years.

Dr. H. S. Banton, Jr., Montgomery, succeeds Dr. Sidney A. Cohn as acting health office of Bullock County. Dr. Cohn has left for military service.

Dr. Albert E. Casey and Miss Joann Gunn, Birmingham, were married recently.

Alabama Association for Mental Health is planning a broad, long-range program for mental health for this year, with the help of civic organizations. Dr. Gwen McWhorter, executive director, stated that one important objective is to aid the mental institutions of Alabama. Dr. Fred Couey, Montgomery psychiatrist, is president of the association and Dr. Frank A. Kay, Birmingham, is working actively with the association.

ARKANSAS

Newly-located physicians in Arkansas are Dr. Adron Bradley and Dr. Max Roy at Forrest City, and Dr. Ed Wheat and Dr. Friedman Sisco at Springdale.

Dr. Erner Jones, Little Rock, has joined the staff of the Veterans Administration Hospital.

Dr. H. L. Brown has moved from Malvern to England.

Dr. L. D. Massey, Osceola, has been elected president of the local Kiwanis Club.

Dr. A. F. Hoge, Fort Smith, has been elected president of the Tulane University Alumni Association for 1952-1953.

Dr. W. T. Holman, Jr., Van Buren, has been elected commander of the Van Buren Post, American Legion.

Dr. Fount Richardson, Fayetteville, is chairman of a special committee in charge of the scientific program for the First International Congress of General Practice which will be held in Mexico City, April 1. Dr. Alfonso Millan, president of the Confederacion Medico de Mexico, will cooperate with the Academy in staging this scientific meeting in Mexico City. This meeting is for those who wish to take the post-assembly tour following the St. Louis meeting in March.

DISTRICT OF COLUMBIA

Medical Society of the District of Columbia has installed Dr. Wallace M. Yater, president; and elected Dr. Herbert P. Ramsey, president-elect; Dr. Maurice A. Selinger, first vice-president; and Dr. Cecile L. Fusfeld, second vice-president. Mr. Theodore Wiprud continues as secretary-treasurer.

Dr. Roger M. Choisser, Washington, has been named the outstanding physician of the year of the George Washington University Medical Society. He is professor of pathology, School of Medicine, a member of the editorial board of *Medical Annals of the District of Columbia*, chief of the section on pathology of the District Medical Society, and treasurer of the Washington Academy of Medicine.

Dr. Oscar B. Hunter, Jr., Washington, is secretary of the American Therapeutic Society which will hold its 1953 meeting at the Biltmore Hotel, New York City, May 28-31.

Dr. John C. Nunemaker, formerly chief of medical services, Veterans Administration Hospital, Salt Lake City, Utah, is chief of research in the division of medicine and surgery, Veterans Administration, Washington.

District of Columbia Division of the American Cancer Society has reelected Dr. Murray M. Copeland, president; Dr. Harry H. Kerr, vice-president; and Dr. Calvin T. Klopp, secretary.

The George Washington University Cancer Clinic and research center, known as the Helen L. and Mary E. Warwick Memorial Building, Washington, now under construction, is three stories high and has eighty rooms. It is financed in part from a $350,000 grant from the Washington Home for Foundlings, which affiliated its cancer activities with the University in 1948, and a $200,000 grant from the National Cancer Institute of the U. S. Public Health Service.

Dr. F. Daniel Suttenfield, Washington, has been appointed a vice-president of the Pan American Medical Association.

Dr. Vernon M. Padgett, Washington, has been chosen as one of the directors of the St. John's Alumni Association.

Dr. Gerald M. McAteer, Washington, has been appointed a medical consultant to the Rehabilitation Commission as announced by the National Headquarters office of the American Legion.

Dr. William G. Puryear, Washington, has moved to South Boston, Virginia.

FLORIDA

The Dade County Medical Association of Miami held its annual meeting on Tuesday evening, December 2, the retiring president, Dr. Ralph Sappenfield, presiding. Reports were received from the chairmen of the various committees. Dr. Ralph W. Jack was installed president, and Dr. Edward Cullipher was presented as president-elect.

The Southern Society of Cancer Cytology was organized during the meeting of the Southern Medical Association in Miami in November. A group of physicians and scientists, having a special interest in cancer cytology, attended the organization meeting. The group is represented by fifty-one founder members and five honorary members. The membership of this new Society is to include clinicians, cytologists, pathologists and investigators. Dr. F. Bayard Carter, of Durham, North Carolina, was elected president, Dr. M. Y. Dabney, of Birmingham, Alabama, vice-president, Dr. J. Ernest Avre, of Miami, executive secretary, and Dr. J. K. Cline, Birmingham, Alabama, treasurer. The Society expects to meet conjointly with the Southern Medical Association.

Dr. Frances E. M. Read, Jacksonville, has resigned as director of the Bureau of Maternal and Child Health of the Florida State Board of Health.

Dr. Richard C. Cumming has been named Ocala's "outstanding citizen for 1952" by the Junior Chamber of Commerce.

Florida Trudeau Society has elected Dr. Philip W. Horn, Jacksonville, president; and Dr. Hawley W. Seiler, Tampa, vice-president.

Dr. Hawley H. Seiler, Tampa, has been appointed a member of the National Advisory Board of the American Trudeau Society.

Florida Division of the American Cancer Society at a meeting held in Daytona Beach reelected Dr. Ashbel C. Williams, Jacksonville, president; and elected Dr. Donald H. Gahagen, Fort Lauderdale, first vice-president; and Dr. David R. Murphey, Jr., Tampa; third vice-president.

Dr. James N. Patterson, Tampa, was recently nominated by the American Society of Clinical Pathologists as a trustee of the American Board of Pathology and was voted into membership by this board for a six-year term.

Dr. Morton B. Morgan, Miami, has been elected a Fellow of the American Academy of Ophthalmology and Otolaryngology.

GEORGIA

The Fulton County Medical Society held its forty-eighth annual banquet meeting in Atlanta at the Piedmont Driving Club on Friday evening, January 9. Dr. Jack C. Norris, retiring president, presided, Dr. William G. Hamm was installed president, and Dr. John W. Turner was presented as president-elect. Dr. Major F. Fowler presented the president's key to the retiring president, Dr. Norris. Twenty-five-year certificates of membership were presented to twenty-four members of the Society. The Honorable Herman Talmadge, Governor of Georgia, made the address of the evening.

Atlanta Graduate Medical Assembly and the Southeastern Section of the American College of Surgeons will meet simultaneously in Atlanta, February 23-25. Dr. Mark S. Dougherty, Atlanta, will be chairman of the Atlanta Graduate Medical Assembly, and Dr. William G. Hamm, Atlanta, is head of the committee on arrangements for the American College of Surgeons meeting.

Dr. J. Wallace Daniel, Claxton, was honored by friends who made a gift of a portrait of him which will remain in the Evans County Health Center. The gift is in recognition of Dr. Daniel's service to the community in his fifty years of practice.

Dr. William Lee Bridges, Jr., is associated with Drs. C. S. Pittman, Jr. and Sr. at Tifton, practice limited to pediatrics.

Dr. John M. Anderson, a graduate of the Medical College of Georgia, and formerly superintendent, Topeka State Hospital, Topeka, Kansas, has resigned that position to enter private practice in Atlanta.

Dr. Haywood C. Derrick recently celebrated his fiftieth anniversary in the practice of medicine in Oglethorpe.

Dr. Russell E. Andrews, Jr., Rome, replaces Dr. Walter G. Hackett as plant physician at the Celanese Corporation, Rome. Dr. Hackett has been called to military duty at Gunter Air Base, Montgomery, Alabama.

Continued on page 54

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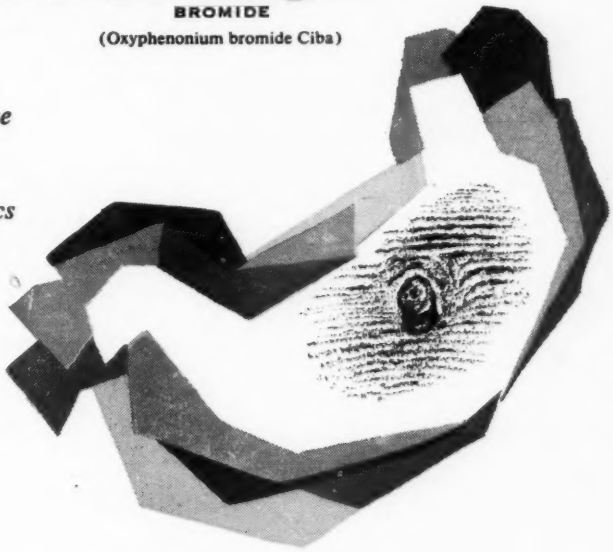

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1. Rogers, M. P., and Gray, C. L.; *Am. J. Digest. Dis.*, 19:180, 1952.

Continued from page 206

Dr. H. L. Barker, Carrollton, was recently elected president of the Tanner Memorial Hospital staff.

Dr. Alexander B. Russell, Winder, has been elected president of the Georgia State Board of Medical Examiners.

Dr. D. D. Merren, Albany, is associated with Drs. J. C. Keaton and J. Z. McDaniel, urologists.

Dr. H. D. Meaders, formerly of Newman, has opened offices in Marietta for the practice of obstetrics and gynecology.

KENTUCKY

Kentucky Chapter, American College of Chest Physicians, has elected Dr. Lawrence O. Toomey, Bowling Green, president; Dr. John S. Harter, Louisville, vice-president; and Dr. Lawrence A. Taugher, Louisville, secretary-treasurer.

Dr. Thomas P. Leonard, Frankfort, has been appointed to complete the unexpired term of the late Dr. F. M. Travis, Frankfort, on the State Board of Health.

Dr. Lewis C. Hafer, Covington, was honored recently when the Kenton-Campbell County Medical Society at a dinner meeting presented him with a scroll in recognition of his half-century of service and credited him with being "instrumental in developing the pediatric department of St. Elizabeth Hospital in Covington."

Kentucky physicians were honored at a testimonial dinner held recently at William Booth Memorial Hospital, Covington: Drs. Joseph D. and Edgar W. Northcutt, who have been on the hospital staff since its opening in 1914; Dr. Nelson A. Jett, who has been a member of the staff since 1924; and Dr. John H. Caldwell, who has been affiliated since 1930. All of these physicians are being transferred to the honorary staff.

Dr. Herbert D. Kerman, who has been on a two-year leave of absence as radiologist with the Oak Ridge (Tennessee) Hospital and the Medical Division of the Oak Ridge Institute of Nuclear Studies, has returned to the University of Louisville School of Medicine as associate professor of radiology. He will also be in charge of the studies of atomic energy products in cancer treatment to be conducted by the University in the new laboratory at the Louisville General Hospital.

Dr. John W. Scott, Lexington, at the Kentucky State Medical Association meeting held in Louisville received the distinguished service medal, and Dr. Charles L. Sherman, Millwood, an award for the most outstanding general practitioner. Dr. Scott was president of the association for 1939-1940.

LOUISIANA

New Orleans Graduate Medical Assembly will hold its sixteenth annual meeting in New Orleans, Municipal Auditorium, March 2-5. The postclinical tour to Europe by ship and plane (England, France, Switzerland and Italy) will be March 7-31. For information concerning the Assembly meeting and the tour, write Secretary, Room 103, 1430 Tulane Avenue, New Orleans 12.

Dr. Sam Hobson, New Orleans, was installed president of the Orleans Parish Medical Society at the seventy-sixth annual installation meeting of the society held January 12.

Dr. Russel L. Holman, New Orleans, was elected vice-president of the American Society for the Study of Arteriosclerosis at the annual meeting held in Chicago.

Dr. Arthur J. Walker, associate professor of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, who has been awarded a Fulbright scholarship for research in tropical medicine at the Institute of Medical Research, Kuala Lampur, Malaya, will spend a year there, returning to the States in October.

Dr. George J. Taquino, New Orleans, was elected vice-president, American Bronchoesophagological Society at its meeting held in Toronto, Canada. Dr. Taquino is professor and head of the Department of Otorhinolaryngology, Louisiana State University School of Medicine, New Orleans.

Dr. George M. Haik, New Orleans, was elected president, New Orleans Charity Hospital Alumni Group at the meeting of the American Academy of Ophthalmology and Otolaryngology held recently. Dr. Haik is professor and head of the Department of Ophthalmology, Louisiana State University School of Medicine.

Louisiana State University School of Medicine has been awarded a grant of $9,007 by the National Heart Institute of the U. S. Public Health Service for continuation of the study on causes and methods of control of cardiac arrhythmias. This project will be under the supervision of Dr. A. Sidney Harris and Dr. Abdo Bisteni.

Continued on page 40

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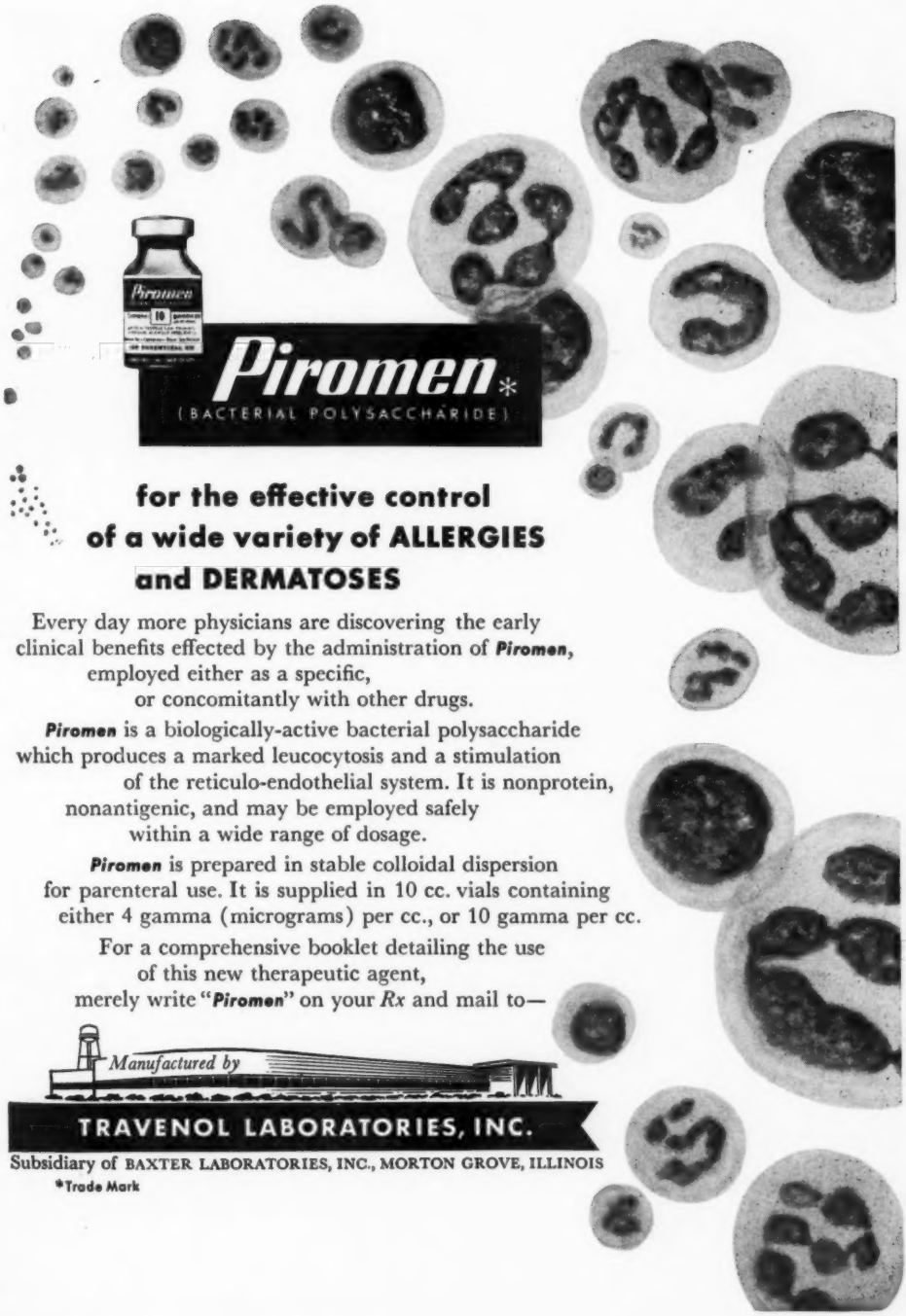

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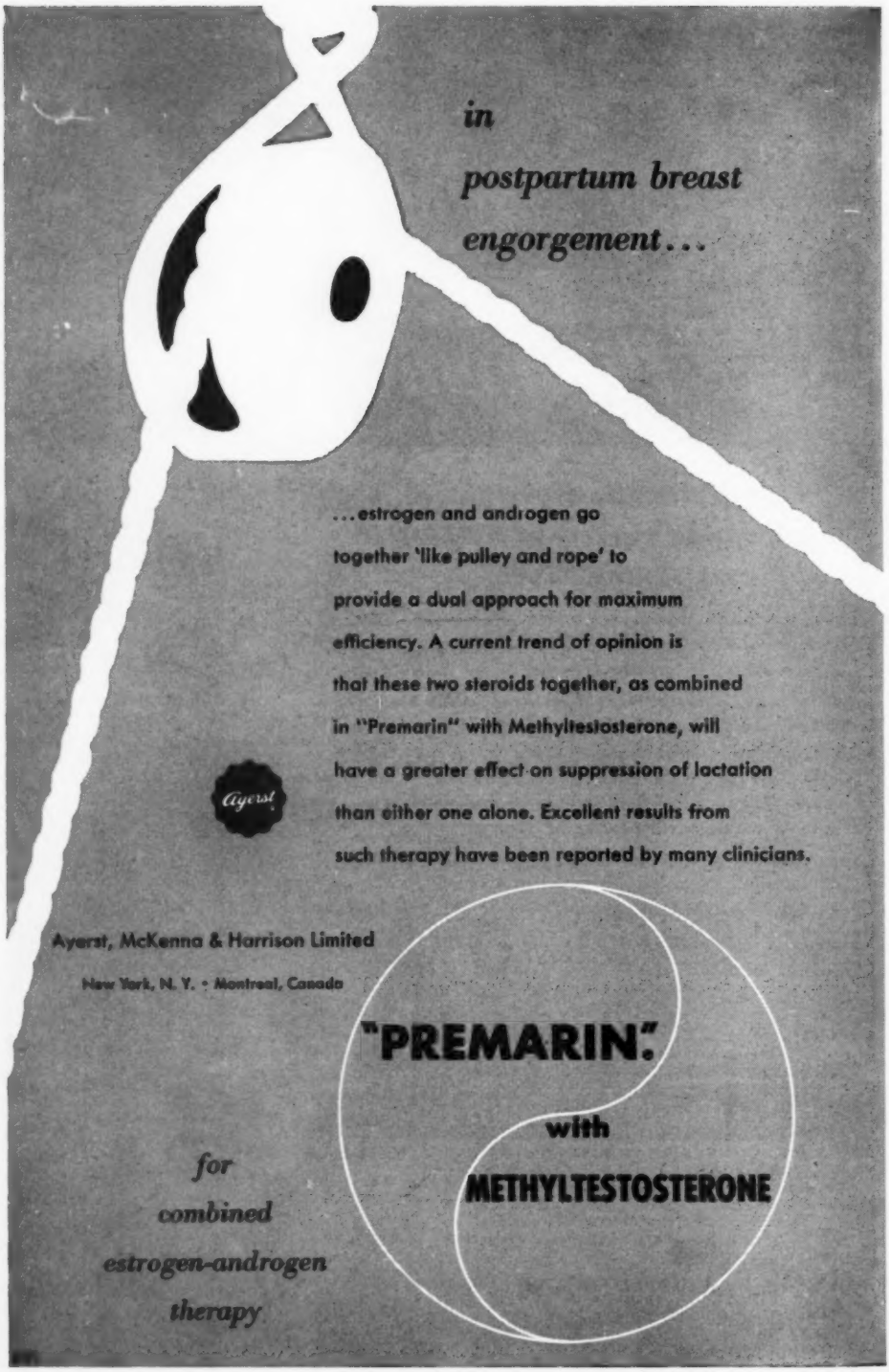
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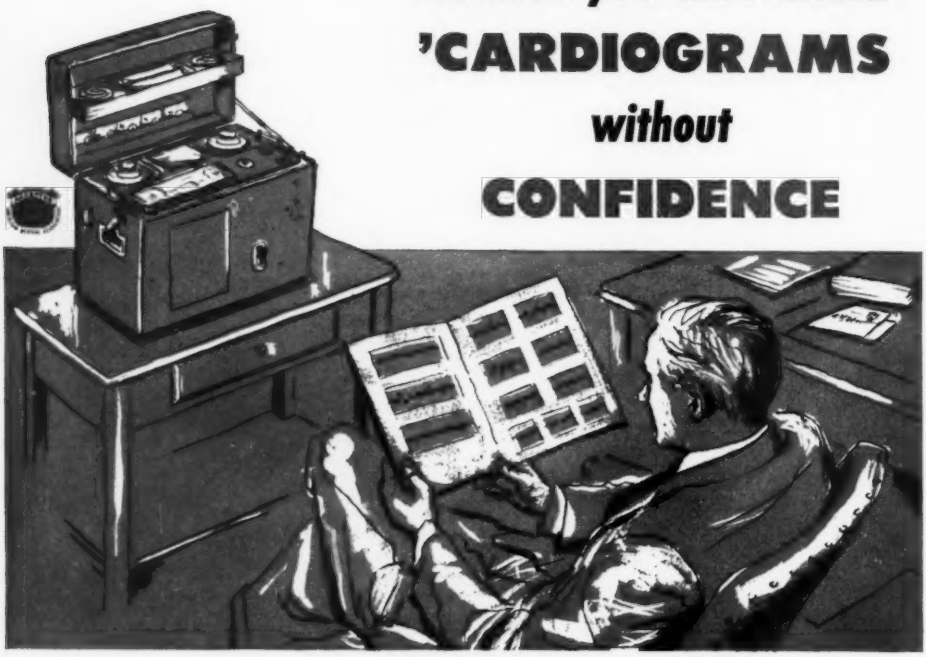

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Natural bile acids *help restore* natural biliary function

- 'Bilron' contains natural conjugated bile acids combined with iron.
- 'Bilron'—a potent, true choleretic—produces bile of natural composition and consistency.
- 'Bilron' is chemically enteric. It is soluble in the alkalinity of the intestine, where bile is normally released.

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Lilly

'Bilron' is indicated in gall-bladder-type indigestion, constipation, biliary dyskinesia, and following cholecystectomy.

PULVULES 'Bilron'

(IRON BILE SALTS, LILLY)

Continued from page 34

Dr. William A. Sodeman, the William Henderson professor of preventive medicine and tropical and semi-tropical diseases and hygiene, Tulane University School of Medicine, New Orleans, was elected president, American Society of Tropical Medicine at the meeting held in Galveston, Texas, November 15, 1952.

Louisiana Academy of General Practice has installed Dr Eldredge L. Carroll, Columbia, president; and elected Dr. John Atkinson, Gretna, president-elect; Dr. Janie Topp, Lake Charles, first vice-president; Dr. Vincent P. Blandino, New Orleans, second vice-president; Dr. Jason C. Sanders, Shreveport, secretary; and Dr. Edwin C. Guidry, New Orleans, treasurer. The Academy will hold its next meeting in Alexandria in September, with Dr. D. B. Barber, Alexandria, as convention chairman.

MARYLAND

Dr. Caroline H. Callison, formerly health officer of Abbeville, McCormick, Marlboro and Chesterfield counties in South Carolina, has been appointed deputy state health officer of Queen Annes County.

Dr. Paul V. Lemkau, chief, division of mental hygiene, State Department of Health, was recently awarded the honorary degree of doctor of science by his alma mater, Baldwin-Wallace College, Berea, Ohio.

The Psychiatric Institute of the University of Maryland School of Medicine, Baltimore, providing 105 beds for in-patient care, was recently dedicated. Dr. Jacob E. Finesinger is director of the institute.

Dr. Nicholson J. Eastman, Baltimore, was installed president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at its annual meeting held in Hot Springs, Virginia.

MISSISSIPPI

Mississippi Heart Association at its second annual meeting held in Jackson installed Dr. Joseph P. Melvin, Jr., Jackson, president; and elected Dr. W. K. Purks, Vicksburg, president-elect; Dr. Arthur Guyton, Oxford, vice-president; Dr. John G. Archer, Greenville, secretary; and Mr. Orrin Swayze, Jackson, treasurer.

Continued on page 42

THE OPHTHALMOLOGICAL STUDY COUNCIL
LANCASTER COURSES IN OPHTHALMOLOGY

Colby College, Waterville, Maine
June 22 to September 5, 1953

SUBJECTS INCLUDED

Anatomy	Pharmacolog
Histology	Neuro-Ophthalmology
Embryology	Motor and Sensory
Heredity	Refraction
Pathology	Slit Lamp
Bacteriology	Perimetry
Optics	Surgical Principles
Physiological Optics	Glaucoma
Visual Physiology	General Diseases and
Bio-Chemistry	Ophthalmoscopy

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Phenobarbital	1/4 gr. (16 mg.)

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more complete relief, over

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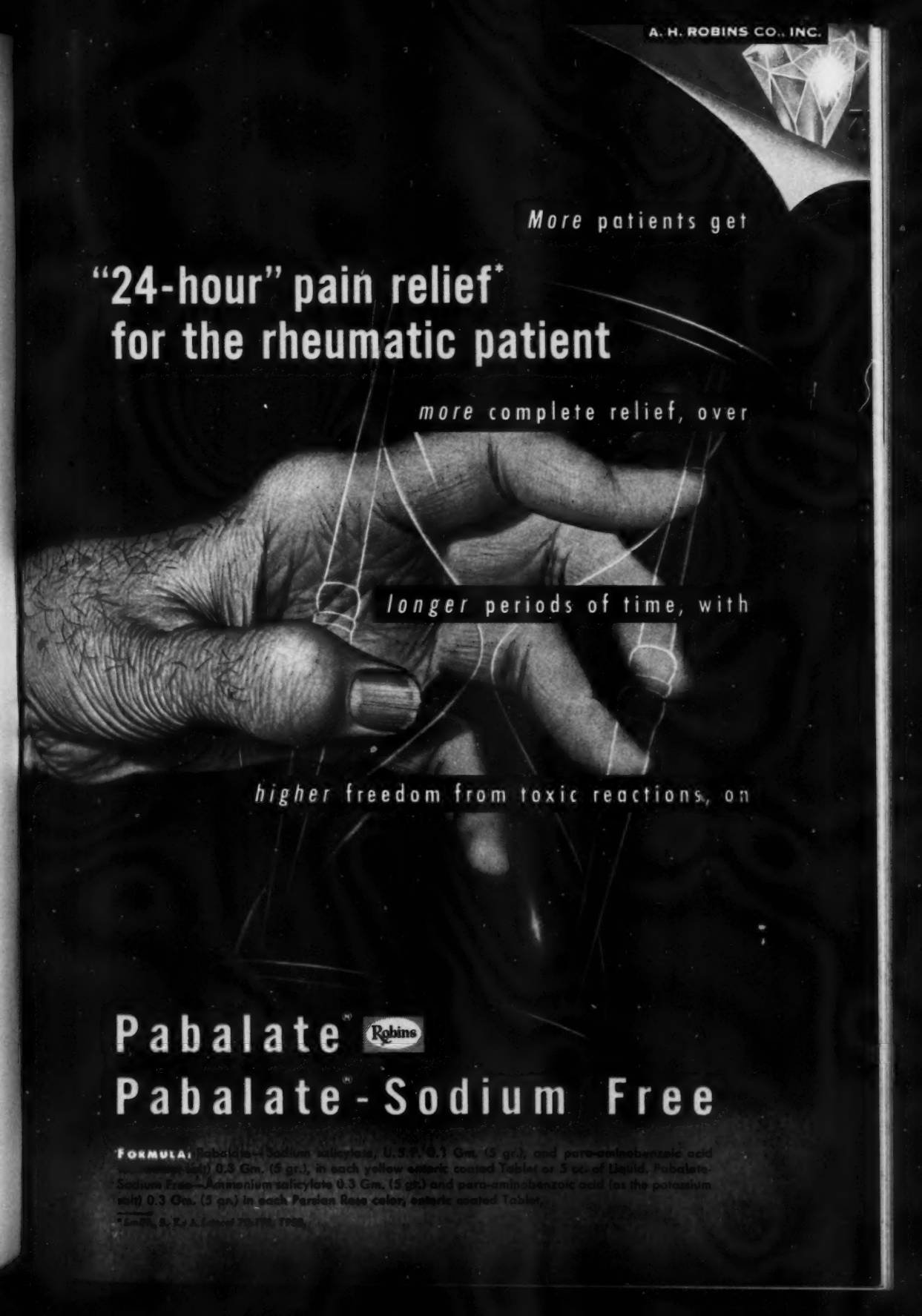

Pabalate® Robins
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FORMULA: Pabalate—Sodium salicylate, U.S.P. 0.3 Gm. (5 gr.), and para-aminobenzoic acid (as the sodium salt) 0.3 Gm. (5 gr.), in each yellow enteric coated Tablet or 5 cc. of Liquid. Pabalate-Sodium Free—Ammonium salicylate 0.3 Gm. (5 gr.) and para-aminobenzoic acid (as the potassium salt) 0.3 Gm. (5 gr.) in each Persian Rose color, enteric coated Tablet.

*Smith, S. R. A. Journal 70:778; 1950.

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- Increases respiratory tract fluid almost 200%
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- No adverse side effects

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FORMULA: Glyceryl guaiacolate 100 mg., and desoxyephedrine hydrochloride 1 mg., per 5 cc., in a palatable aromatic syrup.

*Cass, L. J. and Frederik, W. S.: Am. Pract. and Digest of Treat., 2:844, 1951. Report of blind test on 32 hospitalized patients.

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Ethical Pharmaceuticals of Merit since 1878

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S*pecial "high-blood-level" coating.*

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INDICATIONS: Pharyngitis, tonsillitis, scarlet fever, erysipelas, pneumococcic pneumonia, osteomyelitis, pyoderma. *Also other organisms* susceptible to its action, which include staphylococci, streptococci, pneumococci, *H. influenzae*, *H. pertussis*, and corynebacteria.

DOSAGE: Total daily dose of 0.8 to 2 Gm., depending on severity of the infection. A total daily dose of 0.4 Gm. is often adequate in the treatment of pneumococcic pneumonia. *For the average adult* an initial dose of 0.1 to 0.4 Gm. is followed by doses in the same range every four to six hours. *For severely ill patients* doses up to 0.5 Gm. may be repeated at six-hour intervals if necessary. Satisfactory clinical response should appear in 24 to 48 hours if the causative organism is susceptible to ERYTHROCIN. Continue for 48 hours after temperature returns to normal. Abbott

1. McGuire et al. (1952), J. Antibiotics & Chemo., 2:281, June.
2. Heilman et al. (1952), Proc. Staff Meet. Mayo Clin., 27:385, July 16.
3. Haight and Finland (1952), New Eng. J. Med., 247:227, Aug. 14.

1-68

Continued from page 40

New Coahoma County Hospital, Clarksdale, dedicated in November, has a capacity of one hundred beds. The medical staff includes Dr. T. G. Hughes, president; Dr. E. L. Wilkins, vice-president; Dr. Durward Blakey, secretary, Mr. Reed B. Hogan, administrator, Mr. William G. Montgomery, business manager and Mrs. Alma S. Foulks, director of nursing.

Dr. D. W. Hamrick and Dr. Lee L. Hasseltine have formed a partnership for the practice of ophthalmology and otolaryngology at the Hamrick Clinic, Corinth.

MISSOURI

Dr. Harry M. Gilkey, Kansas City, was installed president of Phi Beta Pi Fraternity at the annual meeting in Birmingham, Alabama, in December.

Dr. James W. Colbert, Jr., has been appointed dean of the St. Louis University School of Medicine, St. Louis, and will assume his duties in March. At 32 years of age he will be the youngest dean of any major medical school in the United States.

Dr. Vincent T. Williams, Kansas City, was appointed editor of the *Journal of the Missouri State Medical Association*, effective January 1.

Dr. James R. Amos, Springfield, who has been director of the Greene County Health Department since 1941, has been named director of the Missouri State Division of Health to fill the vacancy caused by the death of the late Dr. Buford G. Hamilton.

Dr. Gustave J. Dammin, chairman, pathology department, Washington University School of Medicine, St. Louis, succeeds Dr. Clinton Van Zandt Hawn as professor of pathology, Harvard Medical School, Boston, Massachusetts.

Dr. Axel N. Arneson, of St. Louis, was installed president of the St. Louis Medical Society at the regular meeting of the Society on Tuesday evening, January 6. Dr. Jerome I. Simon is the retiring president.

Dr. Harold F. Hoelscher, Warrenton, has been appointed county physician of Warren County.

Dr. Stanley G. Legner, Perryville, has been assigned to the State Hospital at Camp Breckenridge, Kentucky, as chief of the Obstetric and Gynecological Surgery Division.

Continued on page 50

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• **provides extra calories**—150 per ounce, in easily utilized form, for quick gain in weight and strength

• **without excessive bulk**—no undue digestive burden...no reduction in appetite for other foods

• **or cloying taste**—delicious alone or with a variety of nutritious foods

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"DOAK"
POWDER

READILY SOLUBLE IN WATER

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* Applied on acutely inflamed surfaces, weeping eczema, the inflammatory process will be mitigated.

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for dramatic results in pyogenic skin infections

indications

impetigo ecthyma paronychia
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cutaneous ulcers surgical dressings
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Neomycin was more effective for most skin infections than other topical agents used in a series of 675 cases.[1]

Bacitracin has been widely favored for local treatment of skin infections.[2]

The **combination** of both antibiotics extends the broad spectrum activity of each.[3]

Literature available including antibiotic comparison chart

1. Witt, M. L. and Rinehart, E. W.: JAMA 144:339, 1952. 2. Livingood, C. S. et al.: JAMA 144:334, 1952. 3. Rhoads, P. S.: GP 5:92, 1952.

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For insomnia... *you can prescribe with safety*

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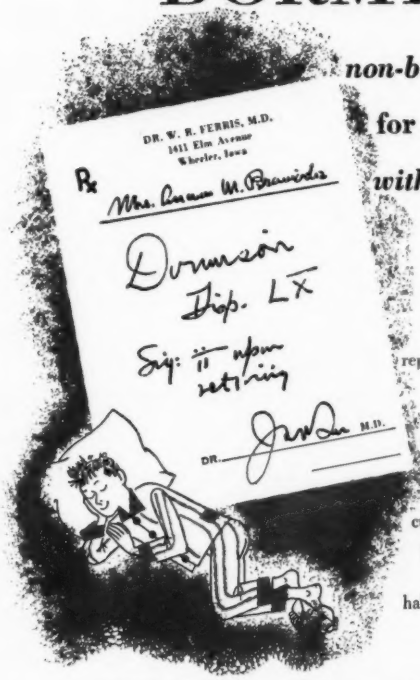

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DOSAGE: Two 250 mg. capsules are recommended, although many patients respond to one.

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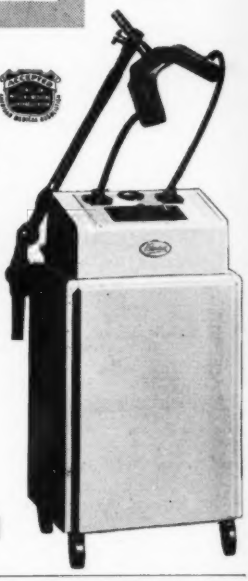

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*Physiol. Rev. 20,249 (1940)

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you couldn't prescribe it—

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Bottles of 16 fluidounces.

- Remarkably low incidence of side effects — less than 5%
- Lowest acetylation yet reported — less than 10% in blood
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- High, sustained blood levels

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DESITIN®
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in **wounds** (especially slow healing)
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DESITIN Ointment *proves in everyday practice its ability to ease pain, renew vitality of sluggish cells, and stimulate smooth tissue repair in lacerated, denuded, chafed, irritated, ulcerated tissues—in conditions often resistant to other therapy.*[1-3]

Protective, soothing, healing, Desitin Ointment is a non-irritating blend of high grade, crude Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Desitin Ointment does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed.

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write for **samples** *and literature*

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70 Ship Street • Providence 2, R. I.

1. Behrman, H. T., Combes, F. C., Bobroff, A., Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.
2. Turell, R.: New York St. J. M. 50:2282, 1950.
3. Heimer, C. B., Grayzel, H. G., and Kramer, B.: Archives Pediat. 68:382, 1951.

Continued from page 42

Dr. Jerome I. Simon, St. Louis, was elected president of the Doctor's Medical Foundation at a recent meeting.

NORTH CAROLINA

North Carolina Chapter of the American College of Chest Physicians at its third annual meeting held in Asheville elected Dr. Leon Felman, president; Dr. Ralph E. Moyer, vice president; and Dr. Norman L. Anderson, secretary-treasurer.

Dr. Charles I. Lahser has opened offices in Gastonia, practice limited to pediatrics.

Duke University School of Medicine, through a grant from the Doris Duke Foundation, has acquired a picture collection of famous physicians and medical scenes for the new Duke medical research building. Dr. J. Calvin Weaver, Atlanta, Georgia, has collected over a long period the 250 framed steel engravings. Duke Medical School Library also houses the Georgia Medical Society library, founded in 1804 at Savannah.

Dr. Wiley D. Forbus, chairman of Pathology Department, Duke University School of Medicine, Durham, has been appointed to the U. S. Atomic Energy Commission's Division of Biology and Medicine. Dr. Forbus also serves as area consultant for the Veterans Administration and consultant to the Armed Forces Institute of Pathology.

Duke University School of Medicine, Durham, has received a $9,928 March of Dimes grant for muscle research to combat polio by Dr. J. E. Markee, as announced by the president of the National Foundation for Infantile Paralysis and Dr. Hollis Edens, president of Duke University. Dr. Markee and Dr. Lennox D. Baker, Duke orthopedic surgeon, are members of the executive committee of the North Carolina Chapter of the foundation.

OKLAHOMA

Dr. Lewis J. Moorman, Oklahoma City, was elected president of the American Medical Writers' Association at its recent meeting held in St. Louis, Missouri.

Dr. John Reynolds, Muskogee, received a 50-year pin at a meeting of the East Central Oklahoma Medical Society. Dr. Reynolds is an early day Indian Territory physician and former mayor of Muskogee.

Dr. Chesley M. Martin, Elgin, was honored recently when presented a gold watch and a silver tea and coffee service bearing the inscription "Dr. and Mrs. C. M. Martin, Elgin, Okla., in appreciation of the many years of faithful service. . . ."

Dr. L. A. Hahn, Guthrie, recently received a 50-year pin and life certificate at a meeting of the Logan County Medical Society.

Dr. A. A. Walker and Dr. Claude Knight, Wewoke, have announced their joint practice of medicine and surgery.

Dr. and Mrs. L. S. Willour, McAlester, recently celebrated their golden wedding anniversary.

Dr. C. A. Traverse, Alva, recently attended postgraduate courses at the Cook County Graduate School of Medicine in Chicago.

Dr. H. M. Prentiss, Nowata, has been named chief of staff, Nowata Hospital.

Dr. James H. Holman has opened an office in Tipton for the practice of medicine.

Dr. F. L. Flack, Enid, has been doing postgraduate work in obstetrics at Johns Hopkins University School of Medicine, Baltimore, Maryland, and Duke University School of Medicine, Durham, North Carolina.

SOUTH CAROLINA

South Carolina Surgical Society has elected Dr. Frederick E. Kredel, Charleston, president; Dr. George T. McCutchen, Columbia, vice-president; and Dr. William C. Cantey, Columbia, secretary-treasurer.

Dr. Ed Proctor has located in Conway for the practice of general surgery.

Dr. A. D. Couch, after serving in the Army for the past two years, has returned to Easley to practice medicine.

Dr. Joel W. Wyman has reopened his offices in Anderson for the practice of dermatology.

Dr. Grady Oliver is associated with Dr. M. J. Boggs, Abbeville, in the practice of general medicine.

Continued on page 54

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are basic in
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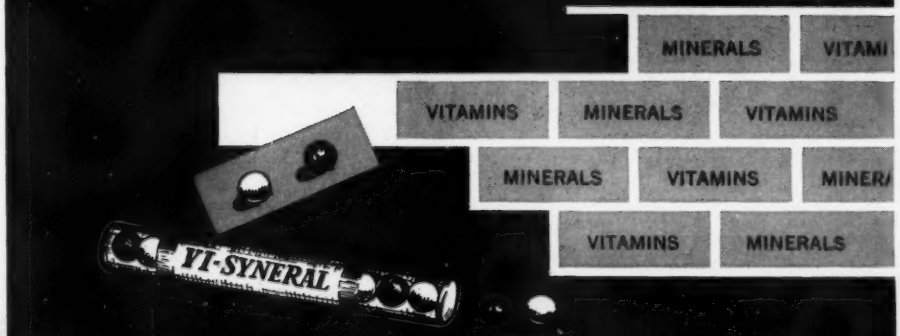

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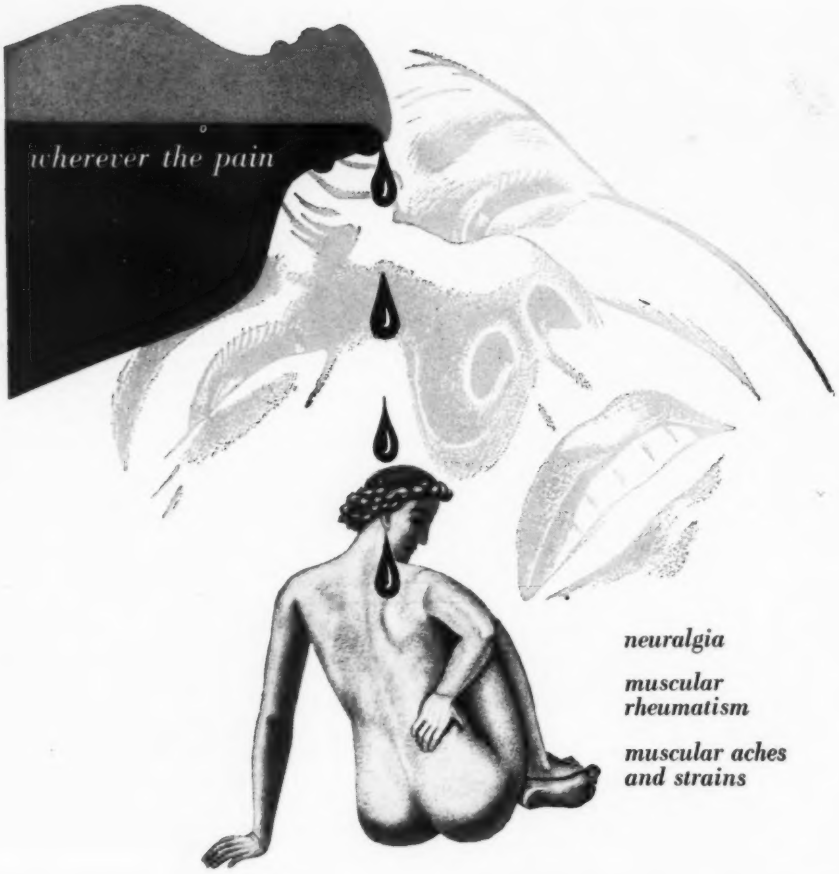

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CONTAINS 58 per cent absorbable salicylates with camphor and menthol

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DIRECTIONS: Apply with gentle massage to affected area three or four times a day.

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The American "18" Pantrak

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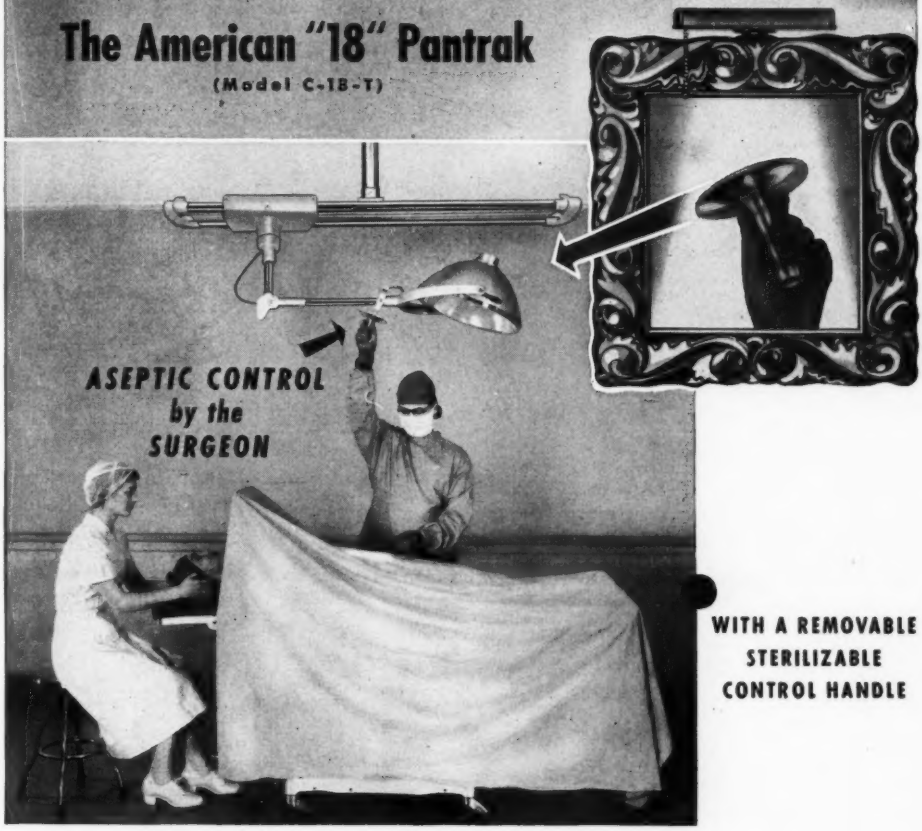

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Continued from page 50

Dr. Wayne Reeser is associated with Dr. O. R. Russell, Conway, in the practice of radiology.

Dr. Harvey E. McConnell, Lancaster, has been awarded a fellowship in the American College of Surgeons.

Dr. W. B. Jones has resumed his practice in Beaufort after being released from military service.

Dr. Francis H. Gay is associated with Dr. James T. Green, Columbia, in the practice of orthopedic surgery.

South Carolina Academy of General Practice has installed Dr. W. H. Speisegger, Charleston, president, succeeding Dr. T. G. Goldsmith, Greenville.

Dr. Willard Hearin and Dr. Lucius Cline, Greenville, have been called back to active duty in the Navy.

TENNESSEE

Middle Tennessee Medical Association has elected Dr. Taylor Farrar, Shelbyville, president-elect and Dr. Frank Witherspoon, Nashville, secretary-treasurer.

New projects approved under the Hill-Burton Construction Program in Tennessee are the Washington County Health Center, Jonesboro, at a total cost of $65,000 including federal contribution of $33,800; and Lauderdale County Health Center, Ripley, at a total cost of $100,000 including federal contributions of $52,000, to supply fourteen additional beds.

Baptist Hospital, Memphis, will have an addition increasing the hospital's capacity from 500 to 750 beds. A $5,871,987 contract has been awarded a construction company to build this 13-story addition, work expected to begin by March 15.

University of Tennessee College of Medicine, Memphis, through its general practice office, has announced a new type of postgraduate training designed for interested general practitioners from Tennessee, Arkansas, Missouri, Kentucky, Mississippi and Alabama.

Dr. Merlin L. Trumbull, Memphis, was elected vice-president of the American Association of Blood Banks at its annual meeting held recently in Milwaukee, Wisconsin.

Dr. Paul Dudley Lamson recently retired as professor of pharmacology and head of the department, Vanderbilt University School of Medicine, Nashville, and became professor of pharmacology, emeritus.

Dr. B. M. Overholt, Knoxville, has been appointed district surgeon for the L. & N. Railroad, succeeding the late Dr. Kyle C. Copenhaver.

Dr. Moore Moore, Memphis, member of the Board of Directors, Southwestern University, since 1924, has been re-named to a four-year term.

TEXAS

Texas Surgical Society has elected Dr. George W. Waldron, Houston, president; Dr. Harriss Williams, Austin, first vice-president; Dr. Hub E. Isaacks, Fort Worth, second vice-president; Dr. Albert W. Hartman, San Antonio, Secretary; and Dr. Robert Sewell, Fort Worth, treasurer.

Texas Association of Obstetricians and Gynecologists will meet in Fort Worth, February 13-14, under the presidency of Dr. George Adam, Houston.

Texas Public Health Association will meet in Galveston, February 15-18.

Dallas Southern Clinical Society will meet in Dallas, March 16-19.

Southwestern Medical School of the University of Texas, Dallas, recently received grants from the Dallas Heart Association, $13,500 for research in cardiovascular diseases; from the Florence and Irv Walls Foundation, Inc., $1,000 for research in the Department of Surgery, under the direction of Dr. W. D. Weary; and from the United States Public Health Service for the period from April 1, 1953, through March 31, 1954, $6,642 for research under the direction of Dr. Donald Seldin.

Dr. Don Morris, Dallas, has been elected a charter member of the American Academy of Child Psychiatry.

Dr. G. V. Brindley, Sr., Temple, has been elected to the Board of Regents of the American College of Surgeons.

Dr. Mary Ruth Jackson, Dallas, has been elected president of the grand chapter of Alpha Epsilon Iota fraternity, whose thirty chapters are composed of women medical students.

Dr. William F. Mengert, Dallas, was reelected secretary of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at the recent meeting held in Hot Springs, Virginia.

Continued on page 56

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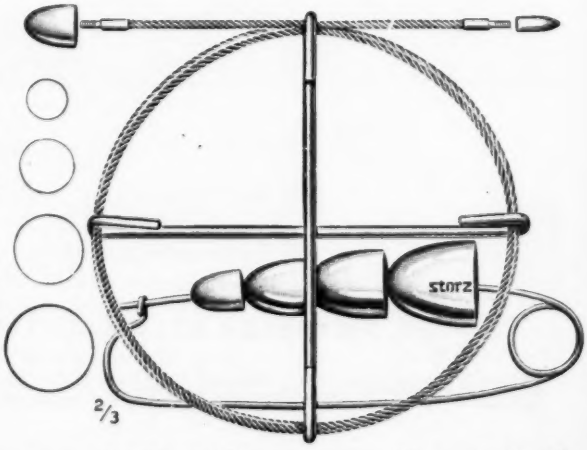
Vein Stripper

Charles R. Doyle, M. D., St. Louis, Mo.



An instrument for the removal of varicose veins. The four stripping heads and the introducing bead are interchangeable on either end of the instrument. Special stainless steel cable which will not kink or stretch.

Complete as shown with tip holder and cable brace, cable, four stripping heads and one introducing bead, Stainless Steel $17.50

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a carefully formulated analgesic . . . sedative . . . antispasmodic—for effective relief of the pain and anxiety which frequently interfere with smooth recovery

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Phenobarbital (WARNING: May be habit-forming)	16.2 mg. (¼ gr.)
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RICHMOND • VIRGINIA

Continued from page 54

Dr. Raphael Mendez, director of the pharmacology laboratories of the Cardiology Institute, Mexico City, Mexico, has been appointed lecturer in the department of pharmacology and toxicology, University of Texas Medical Branch, Galveston.

Dr. Stanley W. Olson, formerly dean of the University of Illinois College of Medicine, Chicago, assumed new duties as dean of Baylor University College of Medicine, Houston, on January 1.

VIRGINIA

Virginia Obstetrical and Gynecological Society has installed Dr. John R. Kight, Norfolk, president; and elected Dr. Chester L. Riley, Winchester, president-elect; and reelected Dr. Chester D. Bradley, Newport News, secretary-treasurer.

Virginia Diabetes Association has elected Dr. C. D. Nofsinger, Roanoke, president; Dr. Robert Bailey, Jr., Richmond, and Dr. Tom Edwards, Charlottesville, vice-presidents; and Dr. William A. Read, Newport News, secretary-treasurer.

Virginia Society for Pathology and Laboratory Medicine has elected Dr. M. L. Dreyfuss, Clifton Forge, president; Dr. Arnold J. Rawson, Norfolk, vice-president; and Dr. W. D. Dolan, Arlington, secretary-treasurer.

Virginia Urological Society has elected Dr. Warren W. Koontz, Lynchburg, president; Dr. T. B. Washington, Richmond, vice-president; and Dr. Wm. Russell Jones, Jr., Richmond, secretary-treasurer, reelected.

Virginia Orthopedic Society has elected Dr. Prentice Kinser, Jr., Danville, president; Dr. Bernard Packer, Richmond, vice-president; and Dr. Allen M. Ferry, Arlington, secretary-treasurer.

American College of Physicians will hold its annual regional meeting for the State of Virginia at Hampton, February 26. Dr. Charles M. Caravati, Richmond, is governor of the College for Virginia and Dr. John McKee, Winchester, is chairman of the Virginia group.

Dr. Richard J. Plunkett, Winnetka, has been appointed secretary of the newly established Committee on Mental Health of the American Medical Association.

Dr. Harold W. Kinderman succeeds Dr. Herman L. Whit-

Continued on page 58

Classified Advertisements

FOR SALE—1 Gordon Armstrong Portable Baby Incubator, Model 500; 1 Shampaine #S-2640 Suval Obstetrical Delivery Bed W/S-2644 Mattress. Contact Levi Memorial Hospital, Hot Springs, Arkansas.

WANTED—Recent graduate with at least one year internship and preferably one year residency who desires graduate instruction in gastroenterology, endocrinology, diabetes, etc. Apply to: Seale Harris Clinic, 2219 Highland Avenue, Birmingham, Alabama.

FOR SALE—New Picker Army X-Ray Unit, 30 M.A., complete with mobile base. $1175.00 F.O.B., Atlanta, Georgia. A. H. Smullian & Company, P. O. Box 4867, Atlanta, Georgia.

ENT RESIDENTS WANTED—EENT HOSPITAL, averages 50,000 out-patient visits annually, adequate supervision, instruction, surgery under board men. Apply at once: EENT Hospital, 145 Elk Place, New Orleans 12, Louisiana.

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The Tucker Hospital is for the treatment of nervous and endocrine diseases. There are departments of massage, medicinal exercises, hydrotherapy and physiotherapy. The Hospital is large and bright, surrounded by a lawn and shady walks, large veranda and has a roof garden. It is situated in the best part of Richmond and is thoroughly and modernly equipped. The nurses are specially trained in the care of nervous cases.

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Given in proper dilution slowly by vein, Solution Intravenous Veriloid usually reduces both the systolic and diastolic blood pressures in a matter of minutes—entirely within the control of the physician. This valuable emergency drug frequently proves to be a life-saving measure.

For Rapid Response in

Hypertensive States Accompanying Cerebral Vascular Disease

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In severe hypertensive states in which prompt relief of distressing symptoms is imperative or in which continued elevation of arterial tension may become life-threatening, the parenteral solutions of Veriloid offer a valuable means toward these therapeutic objectives. They are contraindicated only in pheochromocytoma, aortic coarctation, digitalis intoxication, and high intracranial pressure not secondary to hypertension.

Since the parenteral solutions of Veriloid are potent hypotensive agents, physicians should familiarize themselves thoroughly with their actions and details of dosages and administration, as presented in the leaflet packed with each ampul.

Stearns, N. S., and Ellis, L. B.: Acute Effects of Intravenous Administration of a Preparation of Veratrum Viride in Patients with Severe Forms of Hypertensive Disease, New England J. Med. *246*:397 (Mar. 13) 1952.

Kauntze, R., and Trounce, J.: Treatment of Arterial Hypertension with Veriloid (Veratrum Viride), Lancet *2*:1002 (Dec. 1) 1951.

Wilkins, R. W.: Recent Experiences with Pharmacologic Treatment of Hypertension, in Bell, E. T.: Hypertension, A Symposium, Minneapolis, Univ. Minn. Press, 1951, p. 492.

Kauntze, R.: Medical Treatment of Hypertension, Proc. Royal Soc. Med. *45*:276 (May) 1952.

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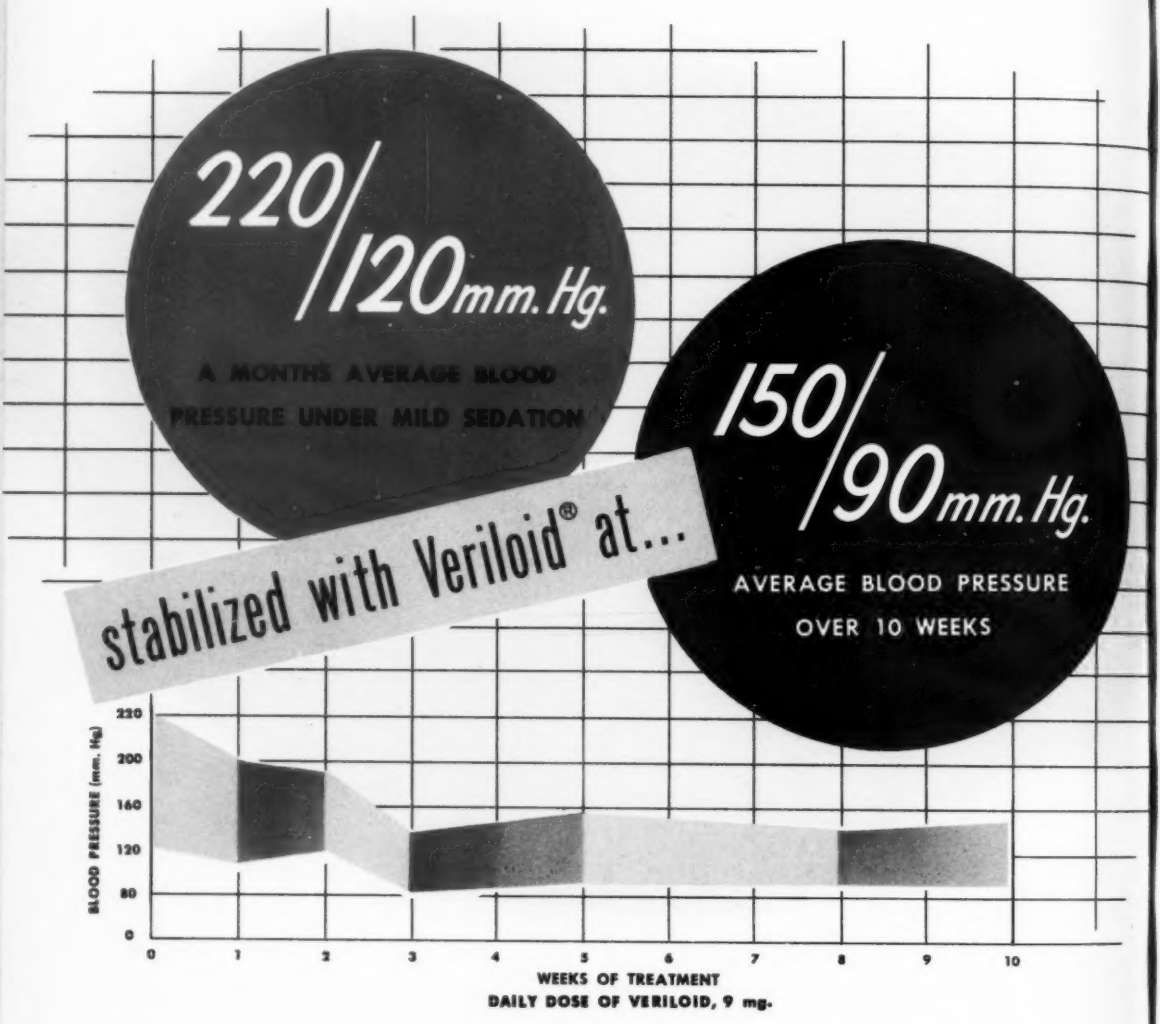

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Introducing a new Valentine product...

for more effective control of gastric hyperacidity.

Particularly indicated in peptic ulcer, "heartburn" of pregnancy, gastric hypermotility, chronic dyspepsia and other functional indigestions.

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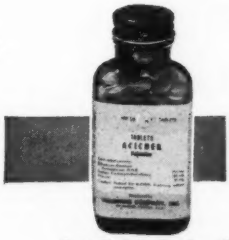
A combination of dihydroxy aluminum aminoacetate, N.N.R., sodium carboxymethylcellulose and glycine.



Supplied in bottles of 100 and 1000 tablets.

- acts almost immediately to give prompt relief from gastric distress
- maintains a desirable pH of gastric contents for hours with no depression of peptic activity
- produces neither secondary acid rise nor systemic alkalosis
- provides a mild, physiologic corrective of constipation
- easily and acceptably administered in tablets which require no chewing

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Continued from page 56

more, deceased, as chief medical director of the State Penitentiary system.

World Medical Association will hold its first western hemisphere conference in Richmond, April 23-25, meeting jointly with the Pan American Medical Confederation. Dr. Louis H. Bauer, Hempstead, New York, is secretary-general of the World Medical Association.

Dr. Thomas Harrison Hunter, formerly associate dean, Washington University School of Medicine, St. Louis, Missouri, has been appointed dean of the University of Virginia School of Medicine, Charlottesville, effective February 1. Dr. Arthur Ebbert, Jr., has been appointed assistant to the dean.

Dr. F. J. Spencer has resigned as health officer of the Giles-Montgomery-Radford Health District.

Dr. William Branch Porter, professor of medicine, Medical College of Virginia, Richmond, was recently honored by his former residents when presented a scroll which read: "In recognition of his many years of devoted service, unfailing interest, and inspirational teaching as professor of medicine at the Medical College of Virginia, we, his former residents, honor our esteemed teacher . . . by founding the William Branch Porter Society."

WEST VIRGINIA

West Virginia Heart Association has installed Dr. W. Fred Richmond, Beckley, president; and elected Dr. Walter C. Swann, Huntington, president-elect; Dr. Francis J. Gaydosh, Wheeling, vice-president; and Dr. William E. Bray, Huntington, secretary.

The 29th Annual State Health Conference will be held in Charleston, Daniel Boone Hotel, May 7-8.

Dr. Donald K. McIntyre, Berkeley Springs, has been released from military service and has located at Charles Town for general practice.

Dr. Philip W. Warga, Parkersburg, has moved to Athens, Georgia, where he will serve as pathologist on the St. Mary's Hospital staff.

Dr. Charles W. Moorefield, Killarney, has moved to Berwin.

Dr. C. Leonard Brown has moved from Point Pleasant to Louisville, Kentucky, where he has accepted a surgical residency at the new Veterans Hospital. He plans to return to West Virginia to practice after completing his residency.

Dr. William V. Crabtree, Cass, has moved to St. Marys where he will continue in general practice.

Aminophyllin . . .

a "most effective single agent for prompt relief" of severe **bronchial asthma**

"useful as a peripheral vasodilator and myocardial stimulant" in

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readily soluble for rapid therapeutic effect.

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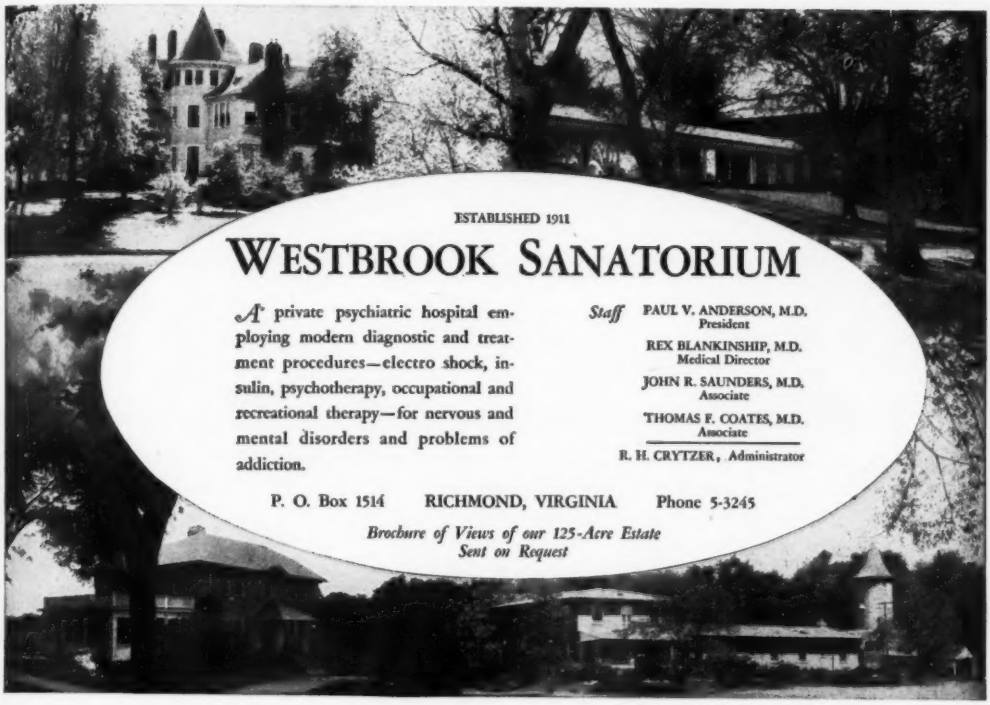
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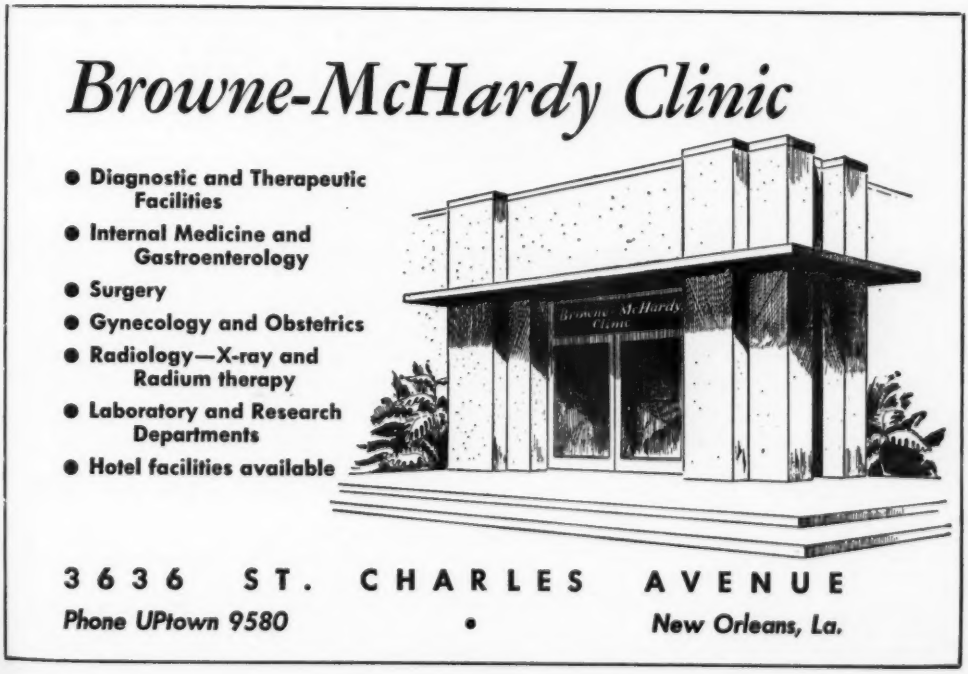
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	Vitamin A	Vitamin D	Ascorbic Acid	Thiamine	Riboflavin	Niacinamide
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". . . concentrations of this drug in the lungs after intramuscular injection are five to ten times higher than those of benzylpenicillin [penicillin G]."[1]

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"Our own evidence would indicate that it is a more effective form of penicillin in patients with chronic pulmonary emphysema and bronchopulmonary infection."[3]

"This compound appeared to have a unique value in respiratory infections due to gram-positive bacteria."[1]

Bibliography: 1. Barach, A.L., et al.: Bull. New York Acad. Med. *28*:353 (June) 1952.
2. Flippin, H.F., et al.: Report distributed at the Chicago Session of the A.M.A. (June) 1952.
3. Segal, M.S., et al.: GP, in press.

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